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ABSTRACT

The major objective of this resource paper is to provide introductory readings for a course that investigates the role of geographical factors in the development, maintenance, and treatment of mental health programs. Themes concern: (1) the influence of geographical factors on mental health, or more generally, the influence of location on well-being; and (2) problems of service delivery and the effects of such factors as relative location, distance, and accessibility on and demand for and supply of help in the community. (JLL)

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GEOGRAPHY AND MENTAL HEALTH

Christopher J. Smith
University of Oklahoma

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FOREWORD

In 1968, the Commission on College Geography of the Association of American Geographers published its first Resource Paper, *Theories of Urban Location,* by Brian J. L. Berry. In 1974, coinciding with the termination of NSF funding for the Commission, Resource Paper number 28 appeared, *The Underdevelopment and Modernization of the Third World,* by Anthony R. deSouza and Philip W. Porter. Of the many CCG activities, the Resource Papers Series became an effective means for permitting both teachers and students to keep abreast of developments in the field.

Because of the popularity and usefulness of the Resource Papers, the AAG applied for and received a modest grant from NSF to continue to produce Resource Papers and to put the series on a self-supporting basis. The present Resource Papers Panel subscribes to the original purposes of the Series, which are quoted below:

> The Resource Papers have been developed as expository documents for the use of both the student and the instructor. They are experimental in that they are designed to supplement existing texts and to fill a gap between significant research in American geography and readily accessible materials. The papers are concerned with important concepts or topics in modern geography and focus on one of three general themes: geographic theory; policy implications; or contemporary social relevance. They are designed to implement a variety of undergraduate college geography courses at the introductory and advanced level.

In an effort to increase the utility of these papers, the Panel has attempted to be particularly sensitive to the currency of materials for undergraduate geography courses and to the writing style of these papers.

The Resource Papers are developed, printed, and distributed under the auspices of the Association of American Geographers, with partial funding from a National Science Foundation grant. The ideas presented in these papers do not imply endorsement by the AAG.

Many individuals have assisted in producing these Resource Papers, and we wish to acknowledge those who assisted the Panel in reviewing the authors' prospectuses, in reading and commenting on the various drafts, and in making helpful suggestions. The Panel also acknowledges the perceptive suggestions and editorial assistance of Jane F. Castner of the AAG Central Office.

Salvatore J. Natoli
Educational Affairs Director
Association of American Geographers
Project Director and Editor, Resource Papers Series

Resource Papers Panel:

John F. Lounsbury, Arizona State University
Mark S. Monmonier, Syracuse University
Harold A. Winters, Michigan State University

SUGGESTIONS FOR CLASS USE

The major objective of this Resource Paper is to provide introductory readings for a course that investigates the role of geographical factors in the development, maintenance, and treatment of mental health problems. It is hoped that students will be able to use the ideas presented to generate further ideas and possibly even to outline viable research projects in areas that are only hinted at in the paper.

The Resource Paper may also serve as a supplementary reading for courses in human, urban, and social geography, where the concern is to investigate either the role of spatial variables in the development of social patterns, or the role of social variables in the development of spatial patterns. Because of the close ties between physical and mental illness, the Resource Paper also contains appropriate materials for courses dealing with issues in medical geography and health care delivery systems. It could also serve as a reference source for courses in relatively new interdisciplinary fields such as environmental psychology, social ecology, architectural psychology, and behavioral geography. One of the major objectives of these courses is to begin a scientific investigation of the influence of physical environments on human behavior and well-being. This objective is consistent with the goals of the Resource Paper.

In a more general context, the Resource Paper should also prove to be useful for research design and technique courses in behavioral or social geography. The contents of Chapters One and Two are particularly appropriate in this context, because they consider some of the theoretical and methodological problems associated with research in these areas.

The author would like to thank the following people for their helpful comments and criticisms on earlier drafts of this paper: James Bohland, B. L. Turner II, Kristen Libbee, and Carolyn Smith. The illustrations are the meticulous work of Mary Goodman. Helen Buster and Helen Smebe typed the various iterations of the manuscript.

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INTRODUCTION

Geography is the study of strange lands and funny people.
An Old Geographical Truth

If mental illness were contagious, geographers probably would have begun to study it long ago. Unfortunately for geographers, but fortunately for the rest of the population, there is little evidence that mental illness is transmitted across space, which makes diffusion and distance decay studies difficult to carry out. Other reasons may be suggested to explain why the study of mental health and mental illness has not reached epidemic proportions, even among medical geographers, but this one seems the most obvious.

Have geographers missed the research grant bandwagon by not studying mental illness? Perhaps they have when we consider that over eighty percent of the population at one time or another experience some degree of psychiatric impairment, and that over twenty-five percent have serious symptoms which generally go undiagnosed (Wolman, 1973). With such statistics it is possible to argue that mental health and mental illness should be problems of significant interest to social geographers. We should also remember that mental illness is linked inextricably to many of the social problems geographers have concerned themselves with in recent years, notably the problems of poverty, old age, racial segregation, urban blight, and crime and delinquency.

One issue which more than any other has brought mental illness under public scrutiny is the institutionalization of the mentally ill. Estimates suggest that one person out of twenty now living in the community will eventually be admitted to a mental hospital (Sauber, 1973). With a potential sample size this large, geographers have ample opportunity to study a special case of migration and the spatial/temporal life histories of mental patients. Counteracting the gloomy prospect of massive increases in hospitalization (or maybe as a result of this prospect), mental health policies in the last decade have begun to de-emphasize mental hospitals in favor of community treatment facilities. People who would have become patients are now hospital outpatients and former patients in many areas are being denied readmission. Mental hospitals are closing down slowly but surely.

Members of the community can now expect increasing exposure to mental illness and the mentally ill. Consequently, the de-institutionalization process raises important questions for geographers. For example, what residential choices are available to former mental patients (Wolpert and Wolpert, 1974)? and what factors should be considered in the location of community mental health centers (Dear, 1974; Smith, 1976a; Wolpert *et al.*, 1975)? Until recently we have acted on the notion that people who are "out of mind" should be kept "out of sight" in isolated institutions (Fracchia *et al.*, 1976). If we are no longer completely able to keep the out of mind out of sight (and therefore also out of our minds), we will be challenged in both a community and a personal sense. Mental illness lurks, figuratively speaking, just one or two years and a couple of changes behind or ahead of us. As the strangers emerge from the mental hospitals, we may find "they" are more like "us" than we had been led to believe, and we may need to move closer to what Wolpert (1976:3) has called ". . . a more pragmatic view of the we/they continuum." Will we be pleased with this new view? On the one hand it means the old "we" are crazier, but on the other hand it could mean the old "they" are saner. Are they becoming more like persons, or are we becoming more like patients? These thoughts are important to us both as people and as geographers.

To date most geographical studies of mental health and mental illness have followed one of two major orientations, both of which are firmly rooted in the tradition of medical geography. The first orientation has involved studies of illness distributions in an attempt to assess how changes in the independent variables are related to changes in the dependent variables. The presence of a significant relationship is then used to make some statements about the etiology and possibly also the treatment of the illness. This traditional ecological approach has been popular for many years in geographical and sociological research. A second major focus for researchers has been to consider the role of geographical variables such as distance and accessibility in the provision and use of health care services. In this Resource Paper both of these major research avenues will be considered, but a number of other possible approaches will also be investigated.

An Outline of the Resource Paper

In research contexts several related options are available for geographers in the fields of mental health and mental illness. The *geographer as observer* is the first of such options. To observe human interactions in their spatial domain is a long-standing tradition in geography. In the study of mental health, the geographer's descriptions and observations can contribute to balanced prescriptions for public policy decisions designed to remedy certain pathological characteristics in the en-

vironment. Thus a second option is the *geographer as prescriber*, a role that will be described in more detail throughout the monograph. A third option, the *geographer as predictor*, goes beyond the first and can contribute to the second option. To provide useful data to alleviate undesirable environmental influences, policy makers need to know what might happen if they were to implement certain actions. Prevention of certain pathologies requires the rechanneling of scarce public resources and some difficult decision-making for which predictive data will be crucial. The fourth option, and the one most academic purists see as their ultimate goal, is the role of *geographer as explainer*. To search for causes and cures of mental illness is as tempting as it is frustrating, and academics are perhaps the only group with the time and the perseverance to seek ultimate explanations. As Chapters One and Four will demonstrate, the search for explanations will often be in vain, but by trying to understand more about the situations we observe, eventually we might be better prepared for prescribing changes.[1]

In this Resource Paper I shall attempt to focus on examples of each of these research options. Chapter One introduces the following chapters by considering some of the major problems geographers may encounter when embarking on research projects in this area. The subsequent chapters describe some of the existing and potential topics of research.

[1] There is one other option—*geographer as self-indulgent fun and interest seeker*—and one should not rule out research done for fun or with romantic or humanistic goals.

I. THEORETICAL AND METHODOLOGICAL PROBLEMS

In a discussion of a relatively new area of interest for geographers, it is appropriate to consider some of the problems researchers may face as they embark on their studies. At the risk of committing the unusual crime of criticizing one's work before describing it, some important theoretical and methodological concerns need to be aired.

What is mental health and what is mental illness? On the surface such questions appear to involve intractable ethical and epistemological concerns, but for the individual researcher the questions relate specifically to the dependent variables selected for study.

What contribution can the geographer make in terms of independent variables? In an ecological study this question forces geographers to identify environmental characteristics that are thought to help or hinder the development of a pathology (mental illness?) or a desirable outcome (mental health?).

What analysis can be used and what reliability and validity can be attributed to the resulting inferences, predictions, and explanations?

What type of research should be conducted in the areas of mental health and mental illness? This question should be asked of anyone involved in research with human subjects, but when dealing with potentially ill and unhappy people, we need to be particularly concerned with ethics and the invasion of personal privacy.

What are Mental Health and Mental Illness?

All-encompassing and lasting definitions are neither possible nor strictly necessary for practitioners in the mental health field, but the search for definitions has filled volumes in the research literature (for reviews see Macklin, 1972; 1973; Offer and Sabshin, 1974; Jahoda, 1958). One of the most important points to emerge from this literature is that negative definitions of either mental health or mental illness are not useful. Mental health is not simply the absence of mental illness, neither is mental illness the absence of mental health. This point was made clear by Bradburn and Caplovitz (1965) and by Bradburn (1969), who established two independent dimensions of psychological well-being, one which they called positive affect and the other negative affect. Bradburn's results demonstrated that the absence of positive affect was completely different from the presence of negative affect. Mental health and mental illness should not be considered simply as the opposite ends of a continuum, because there are many different concepts of both mental illness and mental health (Table 1).

Another issue to be considered is whether such concepts as mental health and mental illness actually exist as meaningful constructs. Can any person be considered truly mentally healthy? Against what standards should we compare our own mental states? Szasz (1960) and other mental health workers have argued for many years that mental illness is a mythical construct borne out of the medical model of thinking in psychiatry. Many psychiatric disorders have no observable causes and consequently no available cures, but at the same time such disorders cannot be ignored. They exist and they are real for the people who suffer them. If we agree that mental health and mental illness do exist (and if we do not, what can we write about?), the next concern is with the establishment of norms and the concept of "normality" from which mental health and mental illness might deviate. Even if we consider the general Freudian view of mental health—the ability to love, work, and play—we are left with the distinct impression that a mentally healthy person loves, works, and plays better or more satisfactorily than . . . than whom? . . . than the norm for any society? Most definitions of mental illness use built-in normative comparisons Sauber (1973:79), defines mental illness in a social context as:

> an interpersonal deviation from socially accepted standards of behavior, or . . . a breakdown in the performance of social roles. Conversely, mental health is definable as interpersonal behavior which seems to fulfill social norms and role requirements.

This definition may be useful, but it leaves unanswered the question of what is a "socially accepted" standard or a "social norm." It is simpler, therefore, in any research context, to define surrogate measures of mental health and mental illness, implying that no general definitions are sought and that operationally defined concepts are selected as needed. The definitions will be determined by the researcher's goals and the characteristics of the population under study. Admissions to mental hospitals are a popular measure of mental illness, but for some population groups this data would lead the researcher to incorrect conclusions. The Hutterites in the Dakotas, for example, exhibit as much pathology per capita as any other population group, but their incidence of hospitalization is close to zero (Eaton and Weil, 1955). Similarly, an investigation of deinstitutionalization might require two different measures: for public policy purposes a body count may be sufficient, but for community treatment we might need to know more about the remission of symptoms among former mental patients (see Chapter Two).

Without adequate definitions of mental health and mental illness, it is impossible to categorize rigidly the

TABLE 1. MULTIPLE CRITERIA FOR POSITIVE MENTAL HEALTH

Jahoda (1958)	Allport (1960)	Maslow (1954)
Attitudes toward the self	Self-objectification	Adequate feelings of security
Growth and self-actualization	Ego extension	Reasonable degree of self-evaluation (insight)
Integration	Underlying philosophy of life	Realistic life goals
Autonomy	Realistic coping skills, abilities, and perceptions; warm and deep relation of self to others	Integration and consistency of personality
Environmental mastery	Compassionate regard for all living creatures	Ability to learn from experience, adequate spontaneity, appropriate emotionality, ability to satisfy group requirements with some individuality, adequate but unexaggerated bodily desires

Source: Sauber (1973: 81).

problems that fall within the purview of geography and mental health. Some even more important problems result from the lack of clarity in definitions. Supposing that in a study of happiness we identify several variables which are related to the avowed happiness of the people in the sample. What have we learned about the mechanisms for improving their happiness? Happiness, according to most sages, is not the end product of any pattern of thought or behavior, but is a spin-off, a vicarious by-product of otherwise unrelated actions. Similarly, can we infer from the results of a study with an operationally defined mentally ill population that certain opposite relationships will hold true for a "normal" population? In both cases the obvious inferences are at best hazardous and at worst wrong. We are touching here on a still greater problem. Can we ever deal adequately with a problem like mental illness, where the subjects of our studies are people with experiences alien to our own, where we may speak the same language as they in terms of syntax, but where the meanings may be entirely different? Consider the possibility that living in a particular area of the city exerts a negative influence on an individual released from a mental hospital. We can identify a statistical relationship, but the inference we make is based on our own "normal" experiences or on experiences we may not even have had ourselves, but which we have read about in books. We ascribe significance to the relationship because we assume it has certain characteristic meanings for us, but on what information do we base such an assumption? The problem involves more than the usual shift of values from researcher to subject; it involves also the assumption that mental illness does not change the characteristics of the people we are studying. We cannot be entirely certain that in the face of obvious changes in behavior, in feelings, and, most importantly, in the way the outside world reacts, that a mentally ill person still responds as we ourselves do to a certain class of stimuli. There is a strong urge to treat the mentally ill like everybody else, an urge which is reinforced by current humanitarian and civil rights movements, but this urge might also serve to mislead some of our work (we shall return to this issue in Chapter Two). When we find a result that contradicts what we expected to find, we tend to think immediately that we did something wrong in our modeling or in our analysis. Why do we question our models of reality when it could just as easily be the reality itself, a normative, self-ascribed reality, which ought to be questioned?[2] In longitudinal studies we follow people from time t=1 to time t=2, to identify the effects of social or spatial variables on a given dependent variable. The most obvious problem in such a study is whether our subjects at time t=2 are still the same people they were at the beginning, and whether we still have the same relationships with them.

Some of these problems are intractable, but rather than throw up our hands in despair, we may wish to continue by making some assumptions and by changing reality to suit our particular purposes.

Dependent Variables

Many discussions of mental health and mental illness refer to a number of closely related terms which are often used interchangeably. To reduce confusion it is useful to define some of these concepts. The terms mastery, defense, coping, adaptation, and adjustment are descriptive terms for some of the processes involved in coming to grips with different problems. Another group of terms describes the outcome or the overall results of the processes listed above. These include mental health, mental illness, psychological well-being, happiness, satisfaction, and quality of life. Some overlap between the terms in both categories is to be expected, but in this context it is helpful to keep them separate. A third set of terms is used to describe the direct and indirect indicators of outcome measures, and these include incidence and prevalence rates of various disorders, mental hospital admission rates, suicide statistics, and number counts on the use of facilities.

White (1974:47-52) has described a useful schema for understanding the differences among the process descriptions. He uses adaptation as the generic concept

[2] This point I must concede to Gunnar Olsson, who questioned *all* of my work this way. With hindsight and with my degree safe, I can now see the argument, but it is not a happy conclusion to be left with.

and defense, mastery, coping, and adjustment as subcategories. Adaptation, according to White, can be defined as an individually acceptable compromise between a person's needs and a particular environmental setting. In this definition, adaptation is a catch-all term for a variety of strategies which bring about a greater degree of fit between person and environment. The definition is similar to Wohlwill's (1974:134) more restricted definition of adaptation in a behavioral context as ". . . a quantitative shift in the distribution of judgemental or affective responses along a stimulus continuum." In the literature, *coping* seems to refer mainly to adaptation strategies utilized in relatively unusual and difficult situations such as puberty, adolescence, menopause, and grief (Murphy, 1974; Murphy and Moriarty, 1976). *Defense* usually refers to a range of responses to danger or physical attack, although a psychological defense would be a response to a felt or perceived attack. *Mastery* involves a successful attempt to overcome certain problems, whether real or perceived. Adjustment is confused with adaptation more than any other term, partly because the difference between the two lies in the scale and magnitude of the reaction. Adjustment implies a modification of the environment or a particular set of response reactions, such as drinking coffee and slowing down during an all-night drive. Adaptation, on the other hand, involves a more substantial set of changes. In the driving situation, adaptation implies that the driver becomes psychologically and physiologically accustomed to driving at night without the smaller scale adjustments needed by the novice.

Definitions of such terms only become important to a researcher if they bring a conflicting orientation to the problem. One solution to such a problem was Bradburn's (1969) decision to abandon the notion of mental health and replace it with psychological well-being. The decision was based partly on the arguments of Szasz (1960) and others that it is incorrect and unethical to use medical terminology to describe mental illness, and partly on the fact that the use of such terminology would involve defining standards for "correct" or "healthy" behavior. Instead of global evaluations, Bradburn wanted to measure different human problems and their solutions, using Szasz's term "problems in living" as a baseline. For each person Bradburn tried to identify the most frequently encountered problems and to investigate which of them were short- and long-term in nature, which resulted from environmental stresses, and which were largely determined by individual factors. From this perspective Bradburn felt that happiness or psychological well-being was the most appropriate term for his dependent variable, and he defined it as the outcome of an individual's search for a satisfactory compromise between environmental factors and personality dispositions. In this sense Bradburn's well-being measure would be the outcome of the process that White (1974) referred to as adaptation.

Choosing Independent Variables

Once a suitable dependent variable is chosen, the problem remains of selecting independent variables. Geographers studying happiness would want to know what spatial and environmental variables are likely to help make people happy or unhappy. For mental patients discharged from hospitals, what geographical variables contribute to the therapeutic nature of the community? Which variables are stress-inducing and which are supportive? One problem that arises immediately in choosing independent variables is inclusiveness. In other words, what is and what is not to be defined as an individual's environment, or how detailed an inventory of the individual's needs, traits, and abilities is necessary? Again, researchers' goals play an important role in forming the definitions, with the additional complication that the selection procedure is likely to encounter the stickiness of interdisciplinary boundaries. The individuals in any research project define the key variables according to their disciplinary and theoretical biases. Thus we find a book called *Psychotherapy and the Role of the Environment* (Voth and Orth, 1973) in which the "external environment" is defined almost entirely as interpersonal contacts, whereas another book, *The Non-Human Environment* (Searles, 1960), is concerned mainly with the role of physical and natural elements in human development. Geographers interested in mental health might want to look specifically at the effect of spatial variations in environmental characteristics; for example, does the network of friends and supportive neighbors differ from one part of the city to the next? Psychologists, on the other hand, might argue for the primacy of intrapsychic variables and the quality of interpersonal relationships, attributing little to the net effects of socialization or location. By spreading the net wider in terms of independent variables, researchers can more closely approximate the complex web of influences on a person's mental health. In other words, what we might refer to as an ecological approach to mental health (see Leff *et al.*, 1970; Hinkle, 1961) would be an attempt to consider a variety of influences in personal, interpersonal, and environmental spheres. The recent burgeoning of new academic subdisciplines has in part been a response to the demand for interdisciplinary studies of person/environment situations, but unfortunately the net effect may be to increase rather than decrease the divisions between academic boundaries.

Once the independent variables are identified, researchers face the problems of measurement and grouping. How do we group apples with oranges, or personality traits with neighborhood characteristics? What data are available, and how reliable are these data? What expenses are involved, and how much overlap exists between the different data sources? Another question, one of major concern to geographers, is the issue of collinearity between the potential independent variables. One solution is to factor analyze or to attach dimensions to the data, selecting out a smaller number of independent characteristics. Identifying stable and independent dimensions makes for better research by reducing collinearity, but may also provide less reliable predictions and less dramatic results. In many cases policy makers and funding agencies look first at the final results of a research report, and often conclude that much ado has been made about nothing if the results are anything less

TABLE 2. THE AFTER-CARE DIMENSION

Items	Loadings
Contact with major after-care worker	.68
Use of after-care facilities	.61
Amount of after-care planning	.45
Type of hospital commitment	.39*
Use of community resources	.35*
Type of prognosis	.32*

* Items with loadings less than .40 were not normally considered to belong to a dimension unless they fit intuitively with other items.

Source: Adapted from Smith (1975a).

than astonishing. Using individual variables may allow researchers to report dramatic results, but if one uses a dimension, some of the items included may have contradictory relationships to the dependent variable, which would cancel out their individual effects. An example is the After-care dimension identified in the deinstitutionalization study (Smith, 1975a; Table 2). After-care was expected to emerge as a major predictor of outcome for discharged patients, because community mental health facilities are intended to provide a network of help and support for patients living outside the hospital. Comparing the mean scores for patients who returned to the hospital with those for patients who did not return, we find significant differences in only two items, and in an analysis of adjustment and recidivism the After-care dimension is unimportant as a predictor, perhaps because some of the items were not positively related to the dependent variable (Table 3).

For geographical research in this field, two other major problem areas should be mentioned: those relating to variable selections in time and in space.

The Influence of Time

Mental health studies often require longitudinal designs to make possible before and after comparisons or to monitor behavioral changes through time. As time passes, nonspecific events may alter an individual's situation. A former mental patient, for example, may leave the state or move to a new house shortly after discharge, and both situations would require flexibility in the data collection. Another problem noted by Becker (1963) in longitudinal studies involving drug addicts, criminals, or mental patients, was that investigators have to recognize that different influences are important at different times. In the case of drug offenders, one set of data would be needed to describe how the individual was first exposed to the drug, how it first became available, and why the individual was willing to try it. Different information would be needed to help explain why the user maintained the habit after the initial phase. For the discharged mental patient, researchers would need to look both forward and backward in time, to settings and situations occurring before, during, and after the patient's hospital episode (Figure 1).

Mental patients have a series of what Goffman (1961) called "careers," each of which is an identifiable sequence of individual movements from one position to another. At each temporal stage individuals are part of a different social network. Mental patients thus have prepatient, patient, and postpatient phases of their careers. Independent and dependent variables would be different at each stage of the analysis. Adjustment in the prepatient phase might be a situation in which the overt manifestation of problems is recognized and the person is institutionalized. Inside the hospital, patients may decide that the benefits of institutionalization far outweigh the liabilities, and thus be inclined to show few behavioral improvements in case the staff consider them for discharge. In the postpatient phase, persons might find themselves unprepared for community living and try to find treatment, preferably in the hospital. At each phase different data are needed to describe the patients and their environmental and interpersonal situations. (For a further discussion of these issues, see Smith, 1975b.)

Spatial Components of the Independent Variables

Corresponding problems exist in the spatial realm of the analysis. To continue with the mental patient example, in each career the scale of analysis will be different as the patient moves from the community to the hospital and then back to the community. During any career, patients may also operate in a number of different spatial domains, each one at a different scale. Patients are individuals, but at the same time they live in a residential unit with family or friends, in a neighborhood, and in a particular part of the city or the county. In such situations two problems exist. The first is that variables important at one scale may not need to be considered at a different scale. The second problem, which is perhaps more typical than the first, occurs when the same variables are considered at all scales, but with changes in importance and magnitude at each scale. An example of the first case would be a study of the ecological variables potentially influencing an individual's mental health. Data would be needed to describe the house, the block, the neighborhood, and the community, but data collection at each level involves different sources and different levels of aggregation (Figure 2).

The second problem, the changing importance of var-

TABLE 3. MEAN SCORES FOR RETURNERS AND NONRETURNERS ON AFTER-CARE ITEMS

Items	Non Returners	Returners	Significance (95% level)
Contact with major after-care worker	2.72	2.93	No
Use of after-care facilities	2.89	3.67	Yes
Amount of after-care planning	2.51	2.58	No
Type of hospital commitment	2.49	2.58	No
Use of community resources	2.01	2.31	No
Type of prognosis	2.40	2.70	Yes

Source: Adapted from Smith (1975a).

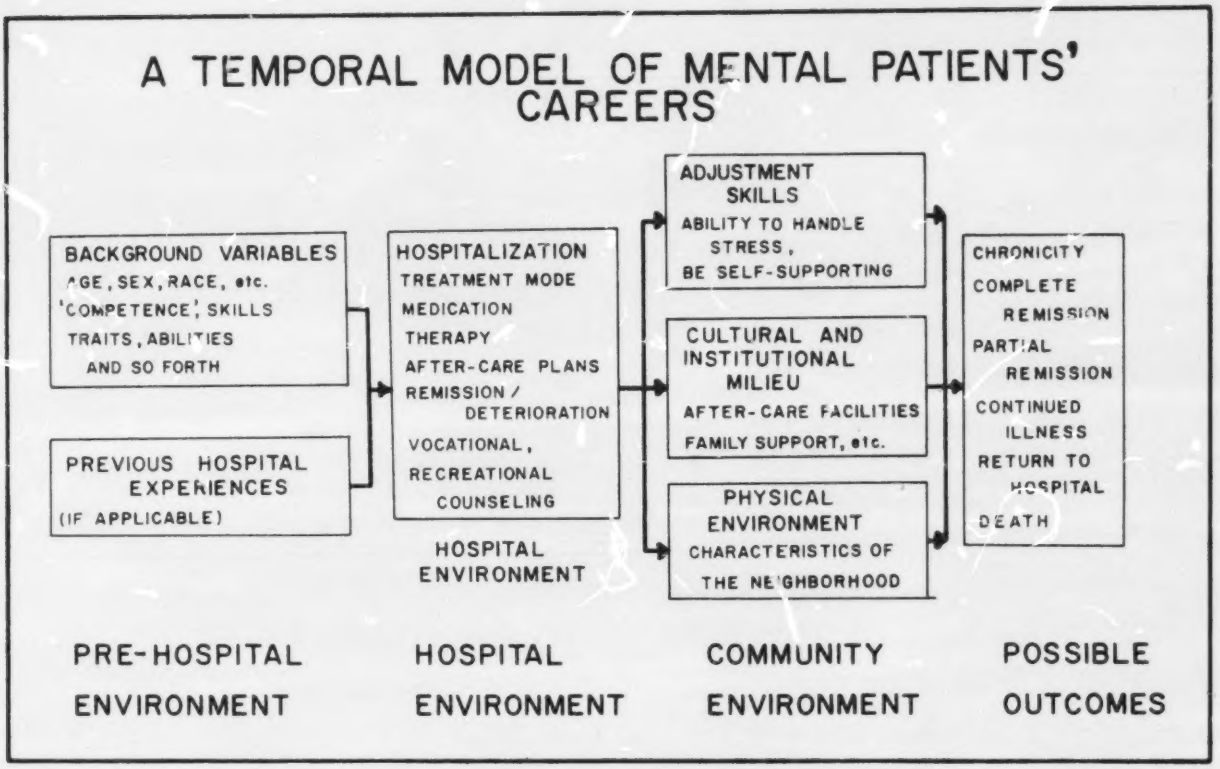

Figure 1. A Temporal Model of Mental Patients' Careers.

iables at ascending or descending spatial scales, can be illustrated by one of Zeno's paradoxes. The scene is a room with four people at different distances from the viewer, each one in a different pose. A mirror on the wall captures the image of the room, but in the mirror the four people have changed positions and each is occupied in a different way. In the mirror is another mirror, again showing people in different positions, and so on ad infinitum.[3] The analogy is illustrated in Figure 3, with variables A, B, C, and D changing in importance and magnitude as the scale of the data collection diminishes.

The perennial problem of boundaries is also related to the spatial dimensions of the independent variables. Much has been written about neighborhoods and communities, but little consensus exists about the boundaries of such spatial units. (For a review of the literature, see Fischer, 1976.) In a mental health context the boundary problem was apparent in the attempts to define catchment areas for community mental health centers (Huffine and Craig, 1973; Dear, 1974). The original definition was geographical, with a catchment area defined as:

> a geographical section within which a community mental health center may be reached in one hour's traveling time, and having a population of 75,000 to 200,000 persons (Regester, 1974:887).

It is evident that the term community need not be spatially or demographically determined, and as Regester (1974) has demonstrated, mental health professionals define the term in different ways. In Table 4 a number of definitions of the term community are listed, and each definition has different implications for determining the target population, the staff characteristics needed, the community needs to be served, and the effects the center

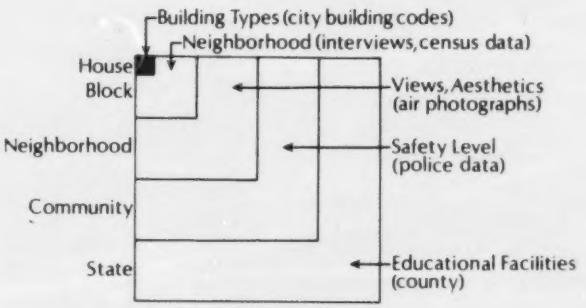

Figure 2. Scale Considerations in Data Collection.

[3] Aging hippies and late 1960s music freaks will recognize this scene as the photograph on the cover of Pink Floyd's record *Ummagumma*. Television viewers during the Democratic Convention will remember a similar scene as they watched Jimmy Carter in his hotel room, while Carter was watching scenes of himself watching television in his hotel room.

TABLE 4. DIFFERENT CONCEPTIONS OF "COMMUNITY" AND THEIR SERVICE-RELATED IMPLICATIONS

Conceptual Model of "Community"	Criteria Determining Target Population (Demographic Definition)	Staff Characteristics	Awareness of Community Needs	Effect on Target Population
1. Geographical Area	Specific catchment area based on residence in a certain area	Must live inside catchment area	Produces territorial behavior, client "dumping," jurisdictional squabbling	Creates "putative" boundaries, alienates some clients who must travel long distances
2. Majority	The greatest number of people in a given region	Must live inside catchment area and be continually active in the community	Impossible goal of responding to all needs	Creates a "numbers game," depending on quantity not quality
3. Vocal Minority	The voice of the economically and politically most powerful	Requires specialist staff member	Political influence on the running of the agency, produces unequal services	Discriminatory and prejudicial service delivered
4. Society at Large	Focus on all people and on all problems	Requires complete diversity of staff	Should enhance awareness at all levels	Enhances positive mental health
5. Common Body	Focus on specific attributes, e.g. life-style, race	Allows homogenous staff	Lack of recognition of some types of problems, e.g. minorities	Infighting between community factions, decreasing tolerance for individual difference
6. Feeling of Belongingness	A group of people who share feelings and accept others	Staff functions should mirror conception of community	Staff should become aware of community needs	Promotes positive mental health
7. Elitist	Determined mainly by staff attitudes about who they want to serve	Hiring of specialists, researchers, others with elitist views	Usually detracts from consideration of community needs	Authoritarian staff, suspicious of "grass roots" organizations

Source: Adapted from Regester (1974).

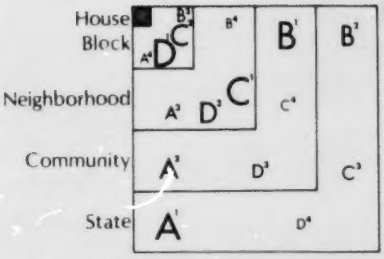

Figure 3. Changing Magnitude and Importance of Data Source at Varying Scales.

will have on the target community. Community is a term with many meanings, and as will be evident in Chapter Two, a spatial definition may not be the most important.

At a smaller scale, researchers may need to define a neighborhood for the purposes of data collection. Using a rule of thumb technique, Dear (1974) defined a six-block area to investigate the negative spillover effects of community mental health centers in Philadelphia. A similar combination of intuition and field checking was used to define residential neighborhoods for the mental patients in the deinstitutionalization study (Smith, 1975a). In this case he determined the boundaries by the goals of the research and the data that were required. To describe the visual and functional characteristics of the area immediately surrounding a given residence it was necessary to define a visible neighborhood and a within-easy-walking-distance neighborhood. From field work he used an estimate of 600 feet as the average distance visible from the front door of a residence, and he defined the visible neighborhood as a cell measuring 1200 feet on all sides, with the residence at the center. He then defined walking distance neighborhoods arbitrarily as the eight contiguous visible neighborhoods (Figure 4).

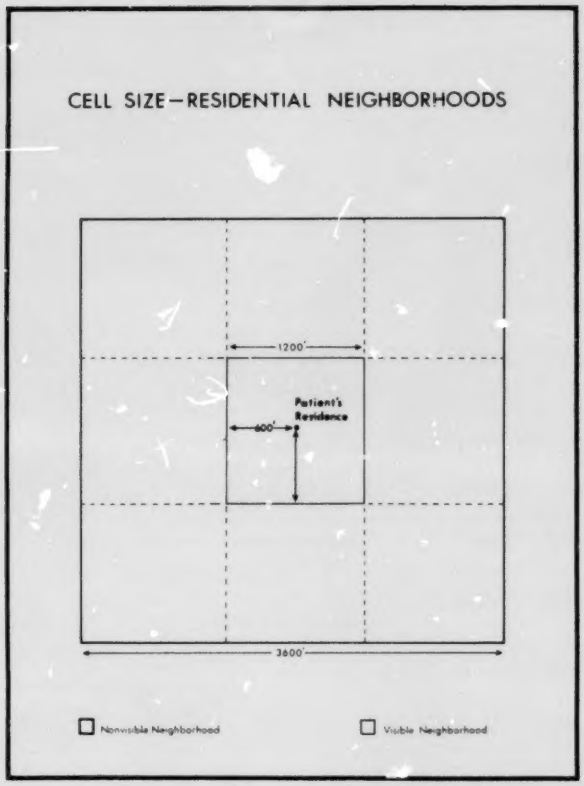

Figure 4. Cell Size—Residential Neighborhoods.

Evaluating Results and Making Inferences

Social science purists like their research to establish causal relationships and explanations, but most policy oriented researchers have been content to describe a situation and predict a range of outcomes. In mental health and mental illness, the latter orientation is appropriate because even after years of research we are no closer to adequate explanations for most types of psychopathology. In recent years a strong public health precedent has been incorporated into the community mental health movement, and the search for definitive causes and cures has been de-emphasized in favor of predicting a probable sequence of events. For planning purposes there is no time to wait for the single, "right" answer because several right answers may be available, and in the meantime many actions could be taken to alleviate the problems of the sufferers.

In spite of these considerations, researchers should take some precautions before recommending that their results are useful for public policy decision-making. One problem that is particularly appropriate in the case of the ecological research conducted by geographers is the danger of falling into an inference trap, a situation in which the researcher chooses a case study from a social system level that does not fit the conceptual model underlying the work (Riley, 1963). Thus, if we make predictions about an individual's mental health based on spatially grouped data, we run the risk of making an aggregate fallacy.[4] Another inference trap is an atomistic fallacy, where the major hypothesis relates to a group, for example a group of married couples, but the data are collected for individual couples. If we believe transiency and suicide are manifestations of social disorganization (Kaplan, 1971), and that both will occur in the same neighborhoods, only partially useful results can be obtained by demonstrating that individuals who commit suicide had also, at some time, been transients.

Another fallacy would be involved if one particular type of theory was emphasized without giving due consideration to other theories. Geographers are not alone in committing fallacies of this type; in fact academic disciplines have consistently rewarded scholars who have demonstrated a uniquely spatial (or sociological, or psychological) contribution to a particular problem. Geographers castigate sociologists and psychologists for ignoring the spatial point of view or the effect of distance, but we might just as easily commit similar of-

[4] The more normal term is *ecological fallacy*, but it is not used here because the hypothesized relationships need not be ecological.

fenses when we move into new areas of research. It is appropriate, therefore, to discuss how researchers, particularly geographers, might try to avoid fallacies such as those described, and how they might be able to substantiate their inferences.

Avoiding Fallacies

To test an ecological hypothesis, an attempt is made to discover relationships between a spatial domain (such as a part of the city) and an outcome measure (such as mental health or mental illness). The inference might be of the following type: the physical, social, cultural, and institutional characteristics of place A help to cause a particular pathology. As Clausen and Kohn (1954) have indicated, researchers need to consider four basic assumptions before they can argue the validity of such an inference. The first is to ensure that spatial variations in the pathology cannot be accounted for by ecological segregation, or "drifting," in other words, by people moving into certain areas *after* the onset of illness. One way to check for drifting is to investigate age structures and recent patterns of mobility in the target population. A second concern is the presence of intercorrelations among the potentially important independent variables, a problem that may tend to highlight the spurious and conceal the significant relationships. As discussed earlier, it is usually advisable to collapse the potentially important variables into a smaller group of independent dimensions. A related problem is to make sure the data adequately describe the environmental characteristics of a specific location, and that they reflect the conditions of life assumed to be influential. This problem is similar to the issue of inclusiveness that was discussed earlier, but the problem will be exacerbated if the data are collected from different sources and at different scales. The choice of a visible neighborhood (Figure 4) is one way to ensure the data are subject specific; that is, that they describe what the residents would actually see from their houses. A fourth concern is to make sure that the probability of being included in the sample as a case does not vary spatially as a result of area characteristics that are not included as independent variables. For example, illness and bizarre behavior might be labeled deviant in some places but not in others,[5] and it would be important to try to control for spatial variations in such factors as police vigilance and institutional admission policies. Another solution to the problem is to use a nonrandom population, such as a group of discharged mental patients (see Chapter Two).

Checking for Fallacies and Searching for Alternative Methodologies

In a landmark ecological study, Faris and Dunham (1939) showed that by mapping what they called insanity rates, the spatial incidence of mental illness could be fitted into the ecological structure of the city. Faris and Dunham hypothesized that the distribution of pathology could be explained in part by social disorganization in different areas of the city. In doing so, they risked a potential sociological fallacy by suggesting that a spatially variant social characteristic was the major variable influencing mental disorder, without controlling for the characteristics of the individuals within each spatial unit. To test for such a fallacy it is necessary to make a segmental comparison (Riley, 1963:703).[6] One approach is to select an individual characteristic thought to be a component of social disorganization, transiency for example, and hold it constant while investigating the overall social disorganization in different spatial units. The segments (marked with an 'x' in Figure 5A) could be compared along the disorganization continuum to check if the originally hypothesized relationship is maintained. In the example shown, researchers would be able to check whether transient psychotics drifted into the most disorganized parts of the city.

A similar technique could be valuable in a study of the spatial efficiency of community mental health services. If we hypothesize that access to facilities contributes to the recuperation of previously hospitalized mental patients, a segmental comparison would allow the hypothesis to be tested in a complementary analysis of the actual users at each location (Figure 5B). An analysis of this type enables researchers to isolate the spatial component of the problem, and then to compare real accessibility, the distance to the facility, with effective accessibility, the actual usage of the facility.

Contextual Analysis

Another useful approach for dealing with aggregative or ecological fallacies is contextual analysis, which allows researchers to assess the relative influence of grouped and individual variables. In the topical context of crowding and density, a contextual analysis would help to determine the relative influence of a) overall neighborhood densities, and b) individual traits, such as a person's perception of crowding (see Fischer *et al.*, 1975). Contextual analysis presupposes that members of a group behave one way as individuals, and another way as members of the group. The early work in this field began with studies of soldiers in different units (Davis *et al.*, 1961). Soldiers who are not promoted tend to behave differently from those who are promoted, but some of the individual differences disappear when outfits with low overall promotion rates are compared to those with higher promotion rates. In reviewing three studies of political affiliation, Sills (1961) reported that an individual's political persuasion is determined largely by parental influence, but when different areas were compared, the contextual effect of the climate of opinion in each

[5] Dohrenwend and Chin-Shong (1969) noted such a tendency and found that ethnic leaders defined mental illness very narrowly, including only the most disturbed cases. This does not necessarily mean that mental illness is more acceptable in ethnic neighborhoods; it could simply be that pathology is so prevalent that only the worst cases are defined as mental illness.

[6] A segmental comparison is a subcategory of what Blau (1960) called a *structural analysis*, in which the analysis focuses on the internal structure *within* each group being studied.

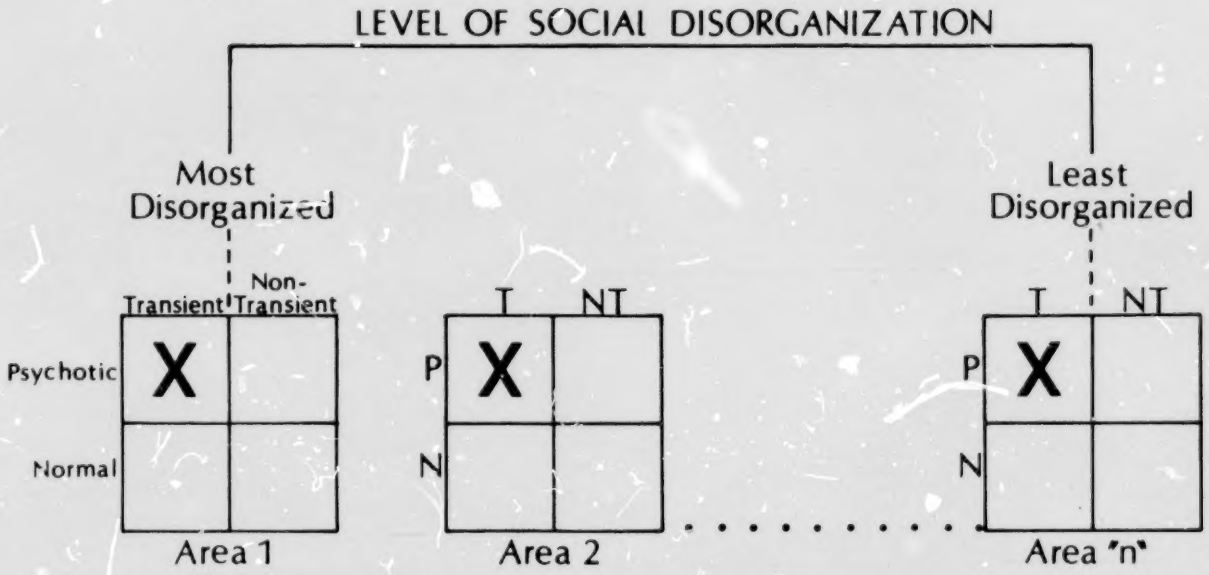

Figure 5a. Segmental Comparisons—Social Disorganization.

area out-weighed the parental influence.

Several possibilities exist for using contextual analysis to investigate the results of the deinstitutionalization study.[7] In Chapter Two, one of the neighborhood characteristics that predicted return to the hospital was a dimension called "Old and Lonely," which measured the percentage of people living alone and the proportion of the people in the neighborhood over sixty-five years old (Smith, 1976b). The results suggested that patients living in neighborhoods with high scores on the Old and Lonely dimension had lower rates of recidivism. This was surprising because it implied that patients had a

[7] At this point the possibilities cannot become realities for that particular study because the necessary data are not available. Such a study is currently in progress.

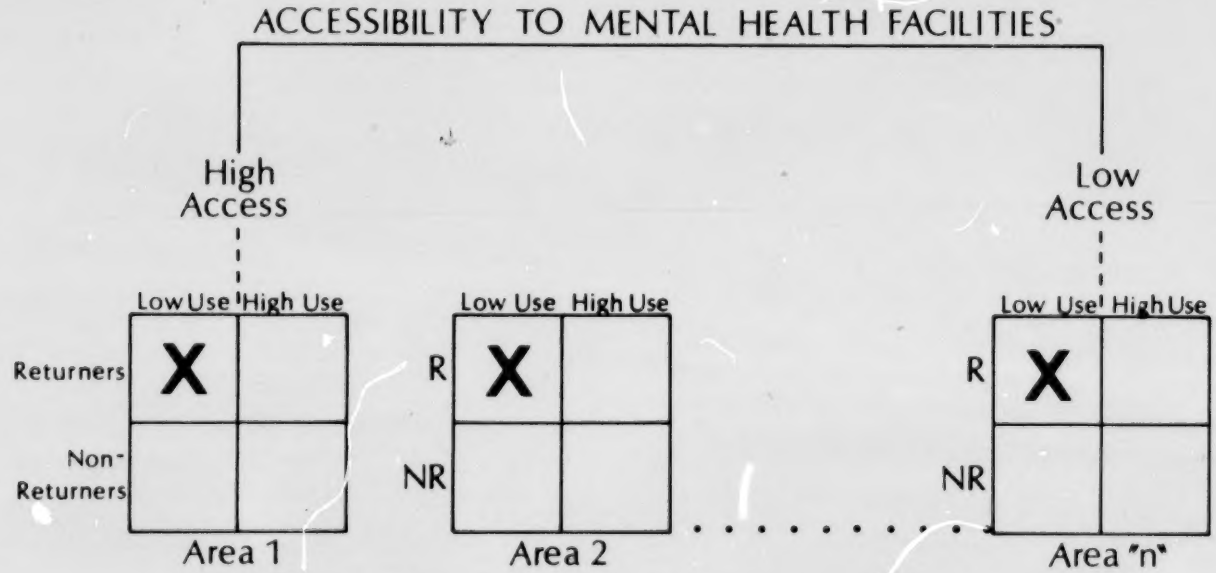

Figure 5b. Segmental Comparisons—Mental Health Facilities.

better chance of staying out of the hospital if they lived in a neighborhood where there were many Old and Lonely people. With adequate data, a contextual analysis could be used to determine whether it was because patients lived in such neighborhoods that they were more likely to stay out of the hospital, or whether it was because they actually lived alone (or were old). If we could determine that the (spatial) contextual effect of living in an Old and Lonely neighborhood was a significant factor, we could mark a partial triumph for geography over sociology and psychology! By plotting recidivism probabilities on one axis and Old and Lonely neighborhood characteristics on the other, it would be possible to highlight the relationship between neighborhood and individual effects (Figure 6). The recidivism probability declines as we move from neighborhoods with low scores on the Old and Lonely dimension to neighborhoods with high scores, but almost no difference exists between patients who live alone and those who do not (Figure 6A). In another situation we find that recidivism probabilities for people living alone are consistently higher than those for people not living alone (Figure 6B). Figures 6C through 6G show other possible situations, some of which suggest that the individual effects (living alone or not living alone) confound the neighborhood effect (the Old and Lonely characteristics).[8]

What Type of Research?

In addition to the considerations discussed thus far, it is important to address some fundamental concerns about the ethics and research standards used in any study of mental health and mental illness. Such questions have assumed increasing prominence in recent years as a result of the civil rights movement and the formation of mental patient lobby groups, both of which have been influential in persuading professional organizations, research corporations, and universities to set standards for ethical research (American Psychological Association, 1973). The issue of ethics should be considered on a case-by-case basis. Sometimes the arguments are straightforward, as in the debates over the use of electric shock and other negative reinforcements (see for example Milgram, 1974), but the issues are more difficult to isolate in the subtle candid camera research where people are set up in compromising situations (see for example Rosenhan, 1973; Milgram, 1974).

In all studies involving mental patients, researchers must obtain written consent prior to the study, and keep all information strictly confidential.[9] One general solution to the invasion of personal privacy is the unobtrusive study (Webb *et al.*, 1960), which has the dual advantages of bypassing most of the ethical problems involved in questionnaire work, and excluding much researcher bias (Rosenthal, 1966). Unobtrusive studies occasionally produce interesting and unexpected results, as in the case of Davis' (1975) door-to-door investigation of the effects of high density living. Davis reported that in high density neighborhoods a significantly larger proportion of residents either responded suspiciously to the interviewer or did not even open their doors.

In any interview researchers run the risk of questioning people with biased or unrepresentative views on the issues. Another concern of interviewers is that the subject may respond to the "researcher's omnipotence" (Rosenthal and Rosnow, 1969) and will either tell researchers what they want to know, or will provide a "socially acceptable" response. The issue of subject manipulation is a major problem in studies of mental illness, where the subjects may be suspicious of a hostile and unaccepting public response to their illness. As Braginsky *et al.* (1969) demonstrated, patients respond differently to tasks when their implied meaning is altered. In one study, Braginsky asked patients to complete a self-rating form describing their symptoms of mental illness. The sample was divided equally into two matched groups, with patients in one thinking the researcher wanted the information for purely academic reasons, and those in the other group thinking he was studying overpopulation in mental hospitals. Not surprisingly, the patients in the second group rated themselves significantly more mentally ill than those in the first group.

The Braginsky study illustrates two facets of the ethics and research standards issue. In the first place, the patients were tricked into defensive stances, but even more important are the questions raised about who can best represent the reality of any particular situation, an issue discussed earlier. One can make strong arguments for interviewing the patients themselves, but the complications resulting from a combination of their illness, their difficulties in understanding the problem, their lack of reading and writing abilities, and the effects of medication, tend to militate against such an approach. It has been demonstrated that the alternatives which provide the most accurate information about in-hospital behavior can be gained from, in descending order: other patients on the ward, ward attendants, nursing staff, social workers, clinical psychologists, and lastly, psychiatrists (Linsky *et al.*, 1959; Honigfeld and Klett, 1965).[10]

Again the issues of obtrusion and intervention are raised. If we are studying the situations of mental patients, our simple presence on the ward might jeopardize the results, quite apart from the invasion of privacy and inducement of fear which might be in-

[8] A discussion of contextual effects in other geographical contexts can be found in Rumley (1975), a commentary on a paper by Johnston (1974). Still other uses are discussed by Sanders (1975).

[9] The written consent requirement is relaxed only if the researchers are employed by the institution or agency in which the patients are residing.

[10] The reader will note that the amount of patient contact declines as we move down the hierarchy from ward attendants to psychiatrists, but salary levels, amount of training, and authority increase. These inverse relationships are common to a number of institutions, including universities (see Smith, 1976f).

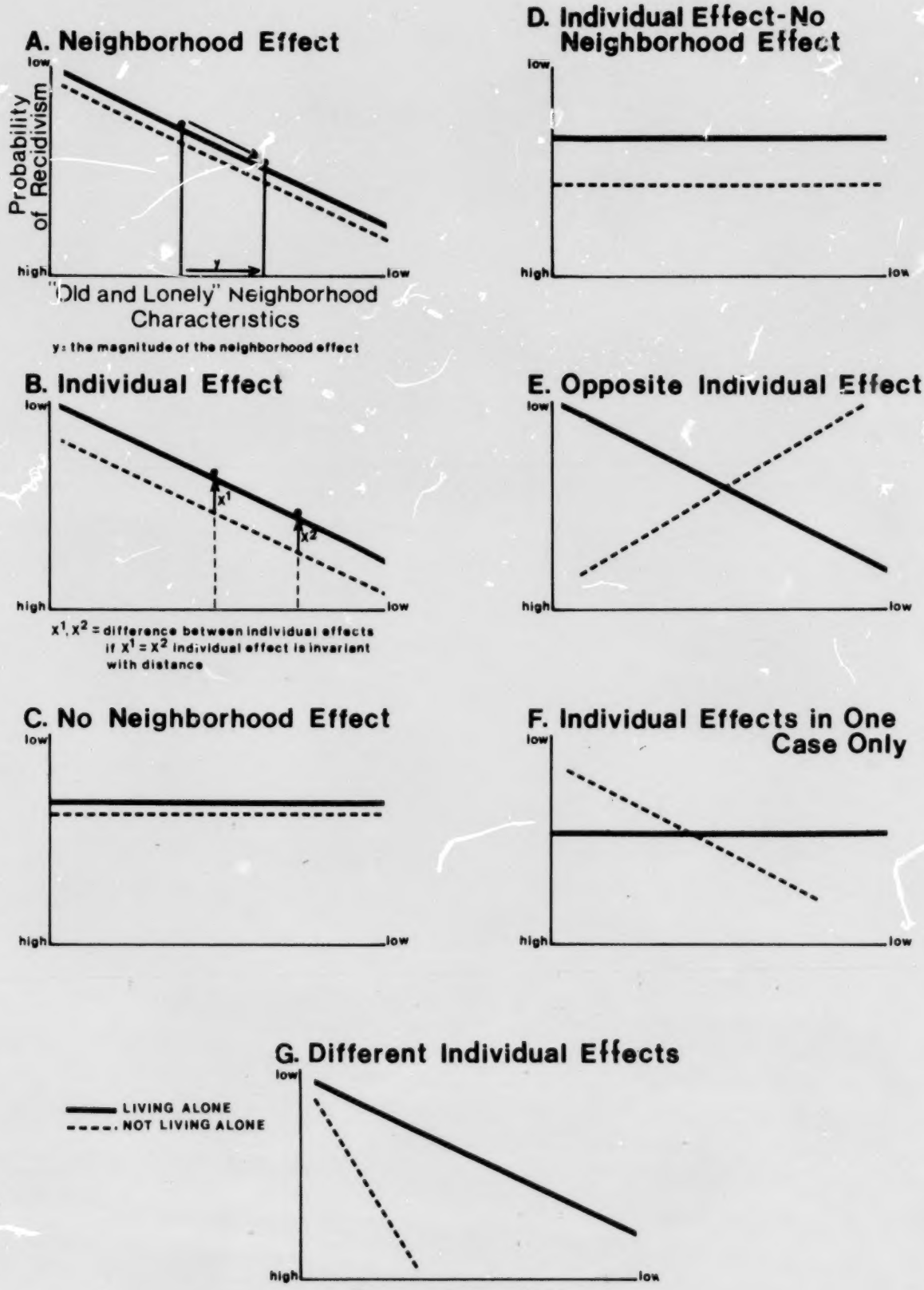

Figure 6. Contextual Effects.

volved. Concern for such issues might persuade researchers to interview not the patients themselves, but rather their hospital workers, a more ethical approach but one which necessarily trades-off some degree of accuracy. In his study of discharged mental patients, Smith (1975a) asked hospital social workers and community mental health workers to evaluate the patients' performance. It was considered neither ethical nor appropriate, in a follow-up study of discharged patients, to locate the patients and ask how well they were adjusting to life in the community. Interference of this type is involved in many longitudinal studies, and the researchers know practically nothing about the degree of bias their presence injects into the data.

II. FROM PATIENT TO PERSON: THE PROCESS OF DEINSTITUTIONALIZATION

While this paper was being prepared, Randall P. McMurphy became a household name following his appearance in *One Flew Over the Cuckoo's Nest*. After watching the movie most people might conclude that mental hospitals are still as bad as they were in 1963. Today, however, although many of the wards are called admission wards, they could more accurately be called discharge wards, because almost from the day the patients enter, the staff begin to prepare for their release into the community. In the late 1960s and early 1970s, a combination of tighter admission policies, accelerated discharge rates, and decelerated return rates, has resulted in a reduction in the inmate populations of most state mental hospitals.[11]

With the change in policies a number of state mental health departments have been accused of making discharge rates and turnover the exclusive goals of mental hospitals, effectively displacing the loftier goal of providing treatment in a therapeutic milieu. As a result, the glaring paradox of institutionalization has become even more visible: the paradox of a societal action designed to help individuals learn to cope better with living in the community by temporarily placing them in a totally alien place. Patients are discharged when they are considered ready to leave the hospital, but for weeks and even months their social workers have been working with their families to find out if and when a return home can be arranged. If such a possibility does not exist, the worker tries to locate a suitable living arrangement in the community, employment contacts are made, and after-care is planned. Some patients are discharged unconditionally but others leave on probation or conditional release for up to three months. Prior to their final exit from hospital, the patients may go on weekend visits or leaves of absence to help them prepare for returning to live permanently in the community (Rock *et al.*, 1968).

For each patient, deinstitutionalization involves coping with a difficult situation. Leaving the hospital as a patient, one is expected to become a "person" again almost immediately. Community acceptance is often difficult to find, but even more important are the fears the patients themselves may have about their ability to make the grade (Bachman, 1971). A research study of community adjustment could focus on any of a number of questions, including: What happens to the patients after they leave the hospital? How do they make a living, find friends, receive medication, and arrange for counseling? What differentiates those who learn to cope from those who do not? Questions with a more specifically spatial component might be included in such studies; for example, what role does distance play in discharge and return patterns? Is it important where the patients live in relation to downtown, to the hospital, to recreational areas, or to the community mental health facilities? Are spatial variations in community characteristics a help or a hindrance in the coping process? Where do the patients go for institutional help? Where are friends and significant others located in the community? As an example of how geographers might tackle such questions as these, the remainder of this chapter will describe parts of a study of mental patients discharged from the Ypsilanti State Hospital in southeastern Michigan.

[11] According to the American Psychological Association *Monitor* (May 1976), state mental hospitals have discharged more than half of their 500,000 resident patients since 1963.

Leaving the Hospital

Moving from an organized and structured setting in the hospital to a more ambiguous one in the community will usually involve a dramatic change in lifestyle. The patients left the community, perhaps not too long ago, to enter the hospital as a last resort. When they leave the hospital, some patients move into new quarters in group settings or room-and-board houses. Others live by themselves, but the majority return to live with their families (Table 5). Some residential changes occur after discharge as people leave the group situation to live on their own, but the Michigan study showed little evidence of patients drifting into slum neighborhoods, a phenomenon which was common in California after a massive exodus from mental hospitals (Wolpert and Wolpert, 1974).

Most of the patients in the sample had some after-care arranged for them at the time of discharge (Table 6), so we are not investigating a group of people who were dumped unceremoniously into the community. In most cases the patients are expected to stay out of the hospital, although for some this is purely wishful thinking on the part of the hospital staff. The process of deinstitutionalization begins with an evaluation of each patient based on his/her behavior on the ward and during leaves of absence. The evaluation is used to determine or predict which patients are ready to leave the hospital, when they should be released, and what arrangements are necessary. To make a contribution, researchers should complement the decision-making process by helping the hospital staff predict community outcomes. In the short run, data are needed to help the hospital workers decide whom to release and how to schedule

TABLE 5. PATIENTS' LIVING SITUATIONS AFTER DISCHARGE

Situation	Immediately After Discharge		Three Months After Discharge	
	#	%	#	%
With nuclear family	69	53.1	65	50.0
With relatives	3	2.3	7	5.4
With nonrelatives (unsupervised)	5	3.8	5	3.8
With nonrelatives (supervised)	39	30.0	33	25.4
Alone	14	10.8	20	15.4
	130	100.0	130	100.0

Source: Adapted from Smith (1975a).

appropriate living, working, and after-care contacts. Data in this category can be collected before the patients leave the hospital, but for longer-term predictions data can also be obtained by studying postdischarge outcomes. Geographers, or anyone who wishes to contribute to research in this area, should provide more and better data, for example, about which patients have the best prognosis for release. More importantly, geographers should demonstrate that their data offer new perspectives to workers in the hospital and the community. What is needed is either to improve the predictions, to enable the same predictions to be made from more easily accessible sources, or to change the predictions such that information becomes available in areas which are more accessible to therapeutic interventions. The need may not be for more accurate predictions, but for predictions in areas where something can be done easily to change the eventual outcome.

The Therapeutic Community in the Community

We can assume that patients leaving the hospital are best served if their community living environment is therapeutic and conducive to recuperation. For each individual what is therapeutic will be different, so researchers must first of all identify the domains from which data for the independent variables will be collected. For each individual a range of contexts can be identified and ordered on an ascending scale, namely: 1) *personal characteristics* including traits, abilities, skills, and levels of pathology; 2) *living situation*—family relationships and immediate interpersonal contacts; 3) *neighborhood characteristics*—the type of neighborhood, whether it is urban or rural, crowded or private, quiet or busy, friendly or anonymous, and so on; and 4) *community supports*—the social, institutional, and cultural supports available in the community, including employment, after-care help, and entertainment. It is reasonable to assume that at each level a number of variables can be identified as potential contributors to the therapeutic nature of the community.[12] The schema suggested here is similar to one described by Altman and Taylor (1973) in their study of interpersonal relationships (Figure 7 is a modified version of their model). In this study, data were collected to describe the patients' situations before, during, and after hospitalization, and at a variety of scales relating to personal, family, neighborhood, and community characteristics. From such data, elements contributing to or detracting from a therapeutic community were identified. The geographical contributions to the recuperation process can be summarized in hypothesis form as:

> Does *location in the community*, the patients' residential neighborhoods, have any influence on outcome? More specifically, can an ecological relationship between neighborhood characteristics and recuperation be demonstrated?
>
> Does *relative location*, specifically distance and accessibility to the available support systems in the community, have any influence on outcome?

The data were collected at different time periods (see Figure 1 in Chapter One), and sources included the patients' medical and psychiatric histories, available from their hospital records; a questionnaire completed by the hospital social workers describing each patient's on-the-ward attitudes and behavior; a follow-up questionnaire completed by the primary after-care worker in the community three months after discharge; and a variety of published sources describing the neighborhood characteristics, including air photographs, housing census materials, topographic sheets, and land use maps (Smith, 1975a). The data were first divided into the following groups:

(A) Potentially predictive variables:
  1) social and psychological variables
  2) physical, environmental variables, and

(B) Descriptive variables (potential dependent variables).

Data in these categories were subjected to a combination of multidimensional scaling techniques (see Smith, 1975a) to reduce them to a smaller number of stable and independent underlying dimensions. Table 7 lists the dimensions which were identified and gives a verbal description of each.[13]

[12] It should be clear by now, but in most contexts the community refers to everything outside the hospital. Community will sometimes be used in a more restricted sense as the city or the part of the city in which a person lives. The meaning should be obvious from the context. For a discussion of the concept of a "therapeutic community," see Jones (1953).

[13] The techniques used were Lingoes' (1966) Smallest Space Analysis III algorithm, and the Hierarchical Cluster Analysis (ICLUST) algorithm developed by Tulik *et al.* (1970). The items, their loadings on each dimension, and the sources, are not listed in Table 7, but the interested reader may look elsewhere for further details (Smith, 1975a).

TABLE 6. AFTER-CARE ARRANGEMENTS AT TIME OF DISCHARGE

	Number	Percent
Hospital Social Worker	50	38.5
Public Health Nurse	9	6.9
Private M.D.	3	2.3
Other County Agency (mental health centers)	18	13.9
Others (e.g. Christian Social Services)	12	9.2
Two or more of the above	33	25.4
No plan	5	3.8
	130	100.0

Source: Adapted from Smith (1975a).

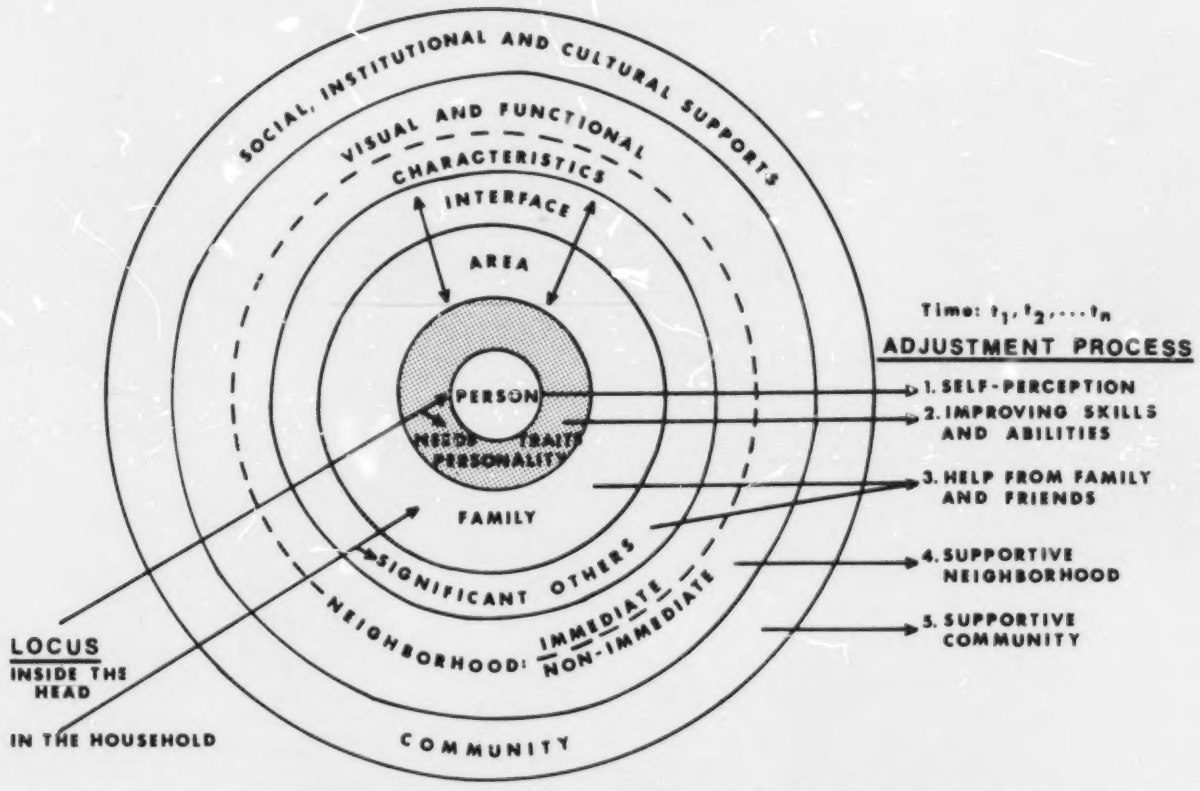

Figure 7. Contributions to the Therapeutic Community. Source: Adapted from Altman and Taylor (1973:21).

Selecting a Dependent Variable

For purposes of mental health policy, a study of post-discharge recuperation in mental patients should provide results about the number of persons who adjust to living in the community without returning to the hospital. Corollary to such a goal should be the desire to identify more humane measures of recuperation, such as how well or how poorly such persons adjust to living in the community; how well their symptoms are kept under control or diminished; and how well they are able to support themselves. The follow-up questionnaire included a number of items which would provide such data, and one which was particularly appropriate for use as a dependent variable was a five-question scale describing the patients' adjustments in the first three months after leaving the hospital (Table 8). Although scores on the five questions were highly intercorrelated, the major problem with using adjustment as a dependent variable is selecting the cut-off points to divide the sample into "good" and "not so good" or "poor" adjusters. If the mean score is used, we find that the sample contains fifty-three good adjusters and seventy-seven poor adjusters, with the skew apparently caused by the mental health workers' pessimistic (or cautious) evaluations of how well the patients had adjusted in the community. The overall mean score on the scale was 3.86, just short of the "below average adjustment" point on the scale. The workers were asked to evaluate patients' adjustments in relation only to their previous performances, but the tendency remained for cautious evaluations[14] (Table 8).

Recidivism, the number of patients in the sample who returned to the hospital, is a much less ambiguous measure of recuperation. It is also one of the most frequently used measures of success and failure in a community mental health or deinstitutionalization program, primarily because it is service-related and can be transferred easily into economic terms (see Appendix A). There are, however, a number of problems involved with using recidivism/nonrecidivism as a dependent variable (Bachrach, 1976). In the first place, recidivism rates can be manipulated upward or downward by policy directives. Patients in one area may be prevented from returning in all but the most serious cases, which is one way to demonstrate the effectiveness of a community program. Recidivism is also a variable that increases over time (Figure 8). Fifty percent of the recidivates in the sample returned to the hospital before three months had elapsed. A study of recidivism at the end of three

[14] A mental health worker offered one other explanation, that the low scores reflected how well (or how poorly) former mental patients actually adjust in the community. In other words, most of the patients function very marginally.

TABLE 7. INDEPENDENT VARIABLES

Category	Dimension Names	Brief Description
Residential Neighborhood Characteristics	Commercial/Industrial	the amount of nonresidential land use
	Recreational	the amount of recreational space
	Close to water	proximity to rivers, lakes, etc.
	Arboreal	amount of tree cover
	Low housing density	amount of space occupied by each housing unit
	Overcrowded	large families, overcrowded, female heads of household
	Expensive real estate	size, average value, and house layout
	Transient	amount of through traffic and percent nonpermanent residents
	Old and Lonely	internal density of housing units and age of occupants
	Single family uniform housing	variety in age and type of housing units, uniformity, and percent single family households
Descriptive Variables	Symptoms of recuperation	measures overall community adjustment, degree of symptom remission, relationships with family since discharge, and medication record
	Employment/Mobility	employment record since discharge and ability to move around in the community
	Stress Index	Any combination of problem events (see text)
Potentially Predictive Variables:	Plans and Abilities	patients' abilities to use community resources, awareness of work-world demands, ability to move around, carry out plans
1) Prerelease Predictors	Desire to leave	patients' preference for living in the community, missing family and friends, seeing hospital as a place to get better
	Institutionalization	time spent in hospital, age and number of admissions
	Current hospital experience	length of most recent hospital episode, and time spent out of hospital since first admission
2) Postrelease Predictors	Family and Living Situation	size of family, marital status, family's attitude to discharge
	After-Care	contact with major worker, use of facilities, amount of planning done, type of commitment order, and prognosis

Source: Adapted from Smith (1975a).

months would have incorrectly classified those patients who subsequently returned to the hospital. Recidivism levels off after twelve months, but a few patients will undoubtedly return in the second, third, and subsequent years (Figure 8; Table 9).

In the original study both recidivism and adjustment were used as dependent variables (see for example Smith, 1976c), but in this chapter only the recidivism measure will be discussed.[15]

Predicting Recidivism in Former Mental Patients: Four Hypotheses

Building on the discussion begun in the last chapter, particular attention in this chapter will be given to the role of geographical variables in predicting recidivism when compared to psychological, social, and institutional variables. Nongeographical variables are as important to a study of "geography and mental health" as geographical variables, because they are constantly obtruding into the investigation. In this discussion, however, we shall consider only two nongeographical contexts: the notion of "learned helplessness" (Seligman, 1973; 1975) among former mental patients; and the need to minimize the stressful events encountered in the first weeks and months following discharge.

A stepwise discriminant analysis technique was used to predict recidivism. The technique selected a linear combination of those variables which maximize the discrimination between recidivates and nonrecidivates in the sample. From the scores on the variables selected, each patient can be classified as a predicted returner or nonreturner, and the accuracy of the results can be calculated by comparing the predicted with the actual classifications (see Smith, 1975a).

Hypothesis I—Learned Helplessness in Former Mental Patients. For patients to stay out of the hospital after discharge we can assume that as a necessary but not sufficient condition they must be willing and able to make the necessary adjustments. Patients must want to leave the hospital and must have demonstrated certain "social competencies" (Zigler and Philips, 1961). Many mental patients, perhaps partly as a result of their incarceration, believe they can do nothing to alter their situation, a concept that has been referred to as "learned helplessness" by Seligman (1975) and Hooker (1976).[16] In times when discharge rates are accelerated, it is possible that many patients are discharged either against their will or before they feel ready to leave. In either case these individuals may want to return to the hospital as soon as they can. Braginsky *et al.* (1969) suggested a

[15] The recidivism statistics listed in Table 9 raise a number of interesting points. For a further discussion of these points, see Appendix A.

[16] The concept is related to other similar concepts, including personal efficacy (Ley, 1975) and the notion of an "internal" as opposed to an "external" locus of control (Rotter, 1971).

TABLE 8. THE MEASURE OF COMMUNITY ADJUSTMENT

How well do you think the patient has adjusted in the following areas since she/he left the hospital?
Please rate as follows:

1 Superior	2 Above Average	3 Average	4 Below Average	5 Very Poor

a. Occupational Adjustment	1	2	3	4	5
b. Family Adjustment	1	2	3	4	5
c. Interpersonal Relationships	1	2	3	4	5
d. Social and Recreational	1	2	3	4	5
e. Community Adjustment	1	2	3	4	5

Additional Information:

a. *Occupational Adjustment*—This should be rated relative to the patient's past employment record. For example, if a patient has never worked in the past it is unlikely that he will now have a full-time job doing productive work. In some cases a part-time job in a very sheltered environment represents a significant achievement for a patient. If the patient has been used to a full-time job, rate according to the hours per week, absenteeism, attitude to work, relations with co-workers, number of job changes, and so on. These same considerations will apply to a patient who has returned to school or who is a housewife. If the patient is retired, disabled, or has never worked, rate N.A.

b. *Family Adjustment*—If the patient has no family or is not living with them, rate her/his adjustment to the group of people she/he lives with. If the patient lives alone, rate N.A. Consider such questions as: Does the patient help with family chores, budgeting, shopping, care of the children? Does the patient meet role expectations (e.g. as a spouse, father, mother, child, house member etc.)? Is there a record of infidelity, separations, and so on?

c. *Interpersonal Relationships*—Consider such issues as: Is the patient isolated or does she/he interact with other people? Can she/he sustain relationships with family and friends? Does she/he entertain friends at home, get along with neighbors, visit friends, etc?

d. *Social and Recreational Adjustment*—Does patient have hobbies, keep himself occupied, go to parties and other social activities in which the patient actually participates? How often does she/he go out willingly? Does she/he actively interest herself/himself in some recreational activity which involves leaving the place of residence?

e. *Community Adjustment*—Is the patient aware of and interested in community events? Is she/he involved actively in community activities, church activities, and so on?

similar hypothesis. It is possible that returning to the hospital may not be a case of learned helplessness, but a case of learned helpfulness, a goal-oriented strategy designed to ensure a swift return to institutional life.

One of the dimensions that most closely measures the patients' willingness and ability to adjust successfully in the community, which may be thought of as the opposite of learned helplessness, was called Plans and Abilities. This dimension predicted outcomes successfully for forty-five (63.4 percent) of the seventy-one patients in the sample, a result significant at greater than the ninety-five percent level (Table 10).[17] This result lent support to the hypothesis that desire and willingness to leave the hospital are important factors in the eventual outcome. As the classification indicates, the Plans and Abilities dimension predicted returners more accurately than nonreturners (25:11 as opposed to 20:15), which is a further indication that patients who lacked the necessary abilities and desire are the ones most likely to return to the hospital. Although this suggests that certain patients, perhaps as a result of years of institutional support, learn to be more dependent on external than internal resources, the notion of learned helplessness might need to be redefined. From an institutional and a so-

TABLE 9. RECIDIVISM: RETURN TO THE HOSPITAL IN A TWELVE-MONTH PERIOD

	Number	Percentage
No Return	66	50.8
9–12 months	11	8.4
8–9 months	4	3.0
7–8 months	6	4.7
6–7 months	2	1.6
3–6 months	12	9.2
1–3 months	12	9.2
less than one month	17	13.1
	130	100.0

Source: Smith (1976a).

[17] The analysis reported on in this section was completed only for those patients for whom neighborhood characteristics were also available (n = 71). No significant differences existed on any variables between these patients and the remainder of the sample (n = 69).

TABLE 10. THE PLANS AND ABILITIES DIMENSION AND THE PREDICTION OF RECIDIVISM

Items Included in the Dimension	Loading
The patient's chances of carrying out higher plans	.72
Ability to use community rather than hospital resources	.69
Ability to move around the community independently	.68
Patient's interest and involvement in planning after-care	.54
Awareness of the demands of the work world	.53
The patient's plans for living in the community	.49
Nonreturners	
Correctly Predicted	20
Incorrectly Predicted	15
Total	35
Returners	
Correctly Predicted	25
Incorrectly Predicted	11
Total	36

Prediction Accuracy Rate 45/71 = 63.4%, $x^2 = 3.8$, $p > 95\%$

Source: Adapted from Smith (1975a).

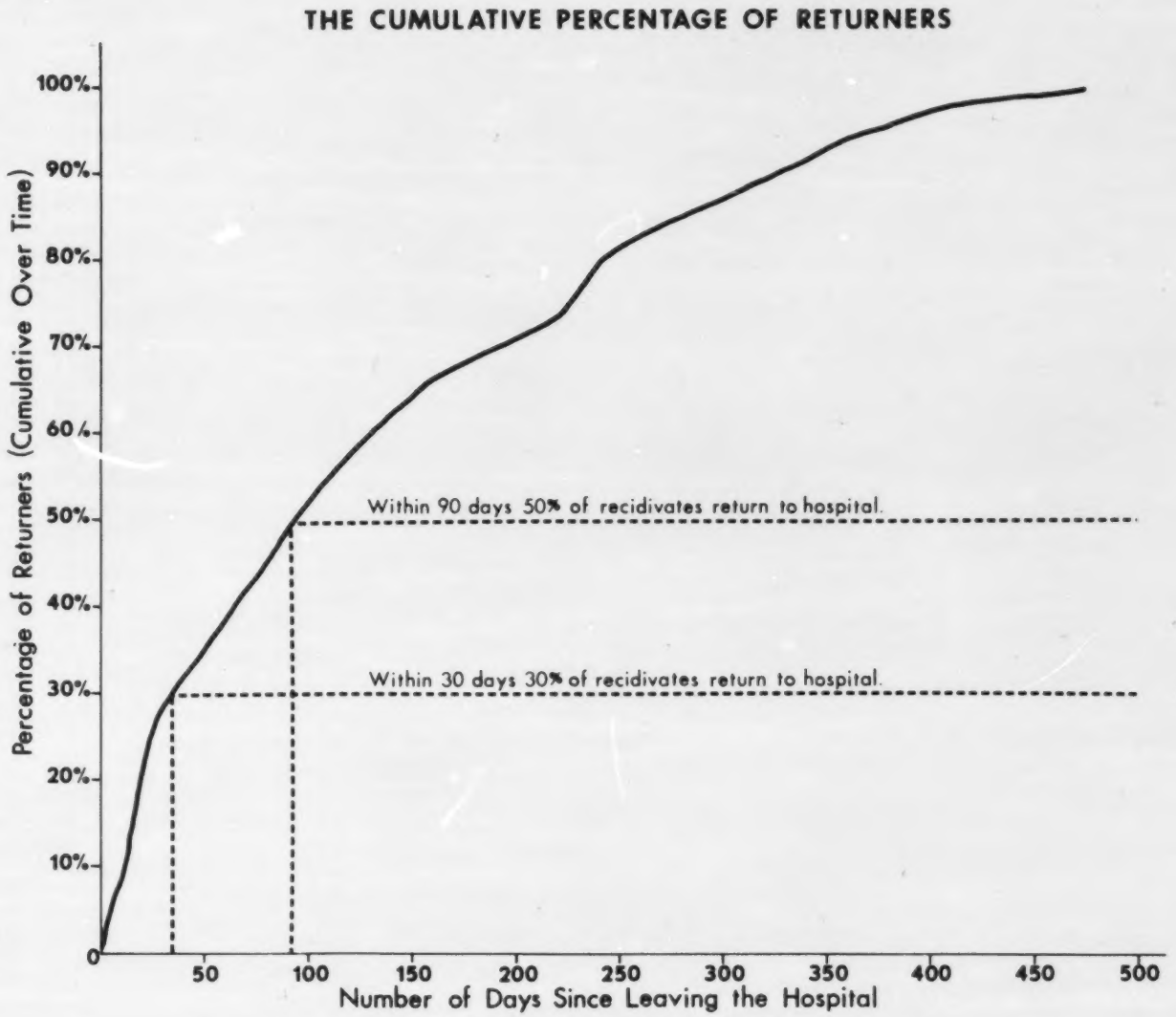

Figure 8. The Cumulative Percentage of Returners.

cietal viewpoint the helplessness is maladaptive, but from the individual's perspective it might be considered highly adaptive.

Another important consideration arises from the data. In an earlier chapter we mentioned that the experience of mental illness might invalidate totally any inferences made by outside researchers. Recent evidence suggests that mental patients, in at least one major respect, are similar to the so-called normal members of the population. If they set goals for themselves and then try to achieve those goals, there is some justification for believing that mental patients are "just like us only more so." The goals may be different but our behaviors usually represent serious efforts to achieve whatever we set out to achieve. Why would we be surprised to learn that mental patients can decide on goals for themselves and then manage their situations to achieve those goals? As Braginsky *et al.* (1969:51-52) have observed, all of us, in varying degrees, are able to manage our expressive behavior to control the impressions others form of us:

> Through selective disclosure of some information . . . (it may be false) . . . consistent with the character we mean to sustain for the purpose of an interaction, coupled with suppression of information incompatible with that projection of self, we establish a certain definition of ourselves that we attempt to maintain throughout the interaction episode (p. 51)

Braginsky went on to suggest that:

> If anything, mental patients should be even more inclined to use this tactic than we are because (1) their objective situation makes them more dependent on others for good outcomes, and (2) they are either in fact, or normatively, prevented from attaining the outcomes by more direct means (for example, by simply requesting permission to be allowed to go home for the weekend) (p. 52).

Braginsky argued that the adaptive behavior patients exhibit in the hospital is consistent with their career plans. In other words, patients who want to continue as patients will act accordingly. The results presented provide some support for this argument by showing that not having the ability and willingness to make a clean break with the hospital may seriously threaten patients' chances of recuperating in the community. It is important to remember that having such abilities does not automatically mean that patients will stay out of the hospital. It represents at best a necessary condition for recuperation and in the next section we shall discuss some of the variables that appear to be sufficient conditions.

Hypothesis II—Stress Minimization after Discharge. For living outside the hospital it will be important that the patients find a relatively stress-free environment as soon as possible. This may occur if the patients are able to handle the stressful events they encounter, or it may be that they avoid or are completely sheltered from such events. The original concept of a therapeutic community was developed from work inside institutions, where it was demonstrated that a scientific manipulation of the environment could help bring about positive behavioral and emotional changes in patients (Jones, 1953). By creating a situation in which patients experience little or no stress in the early months of residence, then gradually introducing minor stresses, it was possible to provide a consistent social structure with minimal information overload and ambiguous demands. The community outside the hospital is less manipulatable than the institution itself, but the same general principles should hold true. This study attempted to identify the problem events that occurred for each patient in the first three months after discharge (Smith, 1975a). Using a technique similar to that described by Rahe (1969) and Holmes and Rahe (1965), an index of stress was calculated as a measure of the patient's ability or lack of ability to cope with the problem events encountered after discharge.

Using each patient's score on the stress index, correct predictions of eventual outcome were made for fifty-nine (83.1 percent) of the patients in the sample (Table 11). These results support the hypothesis that patients' abilities to cope with the stresses encountered immediately after leaving the hospital are an effective predictor of subsequent recidivism. If patients can cope with such stresses they have a better chance of staying out of the hospital. The task of the hospital and community workers therefore, and also of the patient's family and friends, is to help the individual find a relatively stress-free living environment after leaving the hospital, or at least an environment where stress can be managed easily. The problems most frequently encountered by the patients who returned to the hospital are listed in Table 12, and the information in the table should be useful as an indicator of the situations patients should try to avoid when they reenter the community.

Several of the problems identified relate to the patients' family situation, notably "serious arguments with others in the family," "trouble with the children," and "increased strife in married life." As expected, the role

TABLE 11. PREDICTION OF RECIDIVISM USING THE STRESS INDEX

	Nonreturners	Returners	Total
Correctly Predicted	31	28	59
Incorrectly Predicted	4	8	12
Total	35	36	71

Accuracy Rate = 59/71 = 83.1%, $x^2 = 29.79$, $p > 99.9\%$

Source: Smith (1975a).

of the family is often crucial in determining whether a patient adjusts successfully to living in the community (see for example Freeman and Simmons, 1963; Wing and Brown, 1970). Although we shall not spend time here discussing the role of the patient's family, it is important to note that the Family and Living Situation dimension was also a significant predictor of recidivism, correctly classifying forty-nine (66.2 percent) of the seventy-one patients. The items in the dimension were the size of the family, the patient's marital status, and the family's attitude toward the patient's leaving the hospital. The results of the prediction suggest that if patients return to live with supportive families, they have a better chance of staying out of the hospital. For patients with no family at all or no supportive family to return to, the prognosis is less optimistic.

Hypothesis III—The Neighborhood as Therapy. Mental patients in general are less mobile than the average person in the community. After being in the hospital, they may be without a job, without a car, have little money, and perhaps have few friends. Consequently they may be forced to spend a large portion of their time at home and in their own neighborhoods. Recent studies have suggested that the environmental characteristics of

TABLE 12. PROBLEM EVENTS (STRESSES) LISTED FOR RETURNERS

Problem Event	Number of Times Mentioned*
Serious arguments with others in the family	30
Problems with alcohol and drugs	19
Going off medication without advice	17
Reduction in social and recreational activities	11
Failure in job performance	11
Trouble with the police	11
Changes in residence (self-initiated)	10
Trouble with the children	9
Changes of residence (nonvoluntary)	8
Debts past due	8
Increased strife in married life	7
Losing a job	5
Deterioration of financial status	5
Getting and starting a new job	4
Serious physical illness	3
Minor illness-recurrent	3
Marital separation	2
Lost contact with an important person	2
Life changes (menopause)	2

* Many patients experienced more than one problem event. Each event represented a problem of different magnitude (see text).

Source: Smith (1975a).

residential neighborhoods have a significant influence on a number of measures of psychological well-being (Angrist, 1974, Smith, 1976b), and in this study an attempt was made to detect any such effect on recidivism among former mental patients. Neighborhoods differ greatly in appearance and structure. Some are peaceful and attractive to live in because they may help to create or provide a therapeutic community. A neighborhood close to a park might be more conducive to walking around and relaxing than one bordered by a major arterial road. As a first step in testing for the existence of an ecological relationship of this type, it is necessary to include as independent variables the dimensions describing the visual and functional characteristics of each patient's neighborhood in the community.

For each of the seventy-one patients in the sample, scores on the ten neighborhood dimensions were used to predict recidivism (Table 7). In a discriminant analysis, three of the environmental dimensions were selected as significant predictors (Table 13). The first two, Commercial/Industrial and Transience, describe some visual and functional characteristics of the patients' neighborhoods, including the presence of industrial and commercial facilities, high traffic densities, and a higher than average percentage of nonpermanent residents. The results suggest that patients living in such neighborhoods are more likely than others to return to the hospital. Conversely, neighborhoods with low scores on these two dimensions may be more conducive to staying out of the hospital. It was interesting to note that the items in these dimensions add visual components to the social disorganization hypotheses reported in other ecological studies (see Faris and Dunham, 1939). In Chicago, for example, Levy and Rowitz (1973) demonstrated that admission rates to mental hospitals are highest in transient neighborhoods. As their study reported:

> The four highest admission rate areas in the City of Chicago . . . are . . . undergoing significant social change reflected in influx and outflux of people, transiency, significant urban renewal, changes in racial and ethnic composition, and high degrees of social disorganization, manifested in less cohesive communal and family structure . . . (p. 139).

The inclusion of the Old and Lonely dimension in the discriminant solution was surprising because high scores on the dimension describe neighborhoods with many old people and many people living on their own. Such a neighborhood would not normally be thought of as therapeutic, but the results indicated that patients were less likely to return to the hospital if they had lived in neighborhoods with high scores on this dimension.[18] In other words, living in an Old and Lonely neighborhood may have benefited some patients. A neighborhood may be Old and Lonely in social or demographic terms, but if it is not also physically and visually undesirable (for example with the characteristics of the Commercial/Industrial and Transience dimensions), it may be a suitable place for former mental patients to live. To help explain these findings, the researcher discussed them with patients and workers in the hospital. One of the most intriguing suggestions was that Old and Lonely neighborhoods are familiar settings for some mental patients. They may be places the patients recognize and even prefer, places where they are left alone. Everyone does not share the need to be gregarious, and a neighborhood may be more desirable if it provides a low-key setting that places relatively few normative demands on the patient. A hypothesis of this type is consistent with findings reported by Freedman (1975) and Fischer (1976), who have both argued that urban living, contrary to most beliefs, cannot be linked definitively to the onset of pathology.

The three environmental dimensions predict which patients will stay out of the hospital more accurately than they predict returners (Table 13). Apparently the benefits of living in some neighborhoods are substantial but the disadvantages of living in others are relatively unimportant. The implication is that living in a quiet and peaceful neighborhood can be therapeutic but an

TABLE 13. THE NEIGHBORHOOD DIMENSIONS PREDICTING RECIDIVISM

Dimension Name and Items	Source	Loading
Commercial/Industrial		
percentage nonresidential structures	air photo	.83
percentage commercial/ industrial land use	land use map	.82
percentage commercial/ industrial in surrounding areas	land use map	.62
percentage transportational land use	land use map	.58
Transience		
amount of through vehicular traffic	photo	.59
percentage houses with boarders	census	.57
amount of through vehicular traffic	land use map	.43
Old and Lonely		
percentage individuals over 65 years old	census	.71
persons per unit	census	−.61
percentage one-person units	census	.57
Nonreturners		
Correctly Predicted	25	
Incorrectly Predicted	10	
Total	35	
Returners		
Correctly Predicted	19	
Incorrectly Predicted	17	
Total	36	

Accuracy Rate = 46/71, $X^2 = 4.26$, $p > 95\%$

[18] The most important question following such a suggestion, as Chapter One indicated, would involve "ecological segregation" or "drifting" among the patients. Do patients with the best prognosis select neighborhoods most suited to their needs? In this sample I would suggest not, largely because few of the patients changed residences. Most of them returned to their original residences, and many others were placed in half-way houses and other communal settings.

ugly and noisy neighborhood can be ignored effectively. This suggestion is based on slim evidence but it is reinforced by experiments in cognitive psychology which have demonstrated the adaptive ability of the human brain to tune in what it needs and to tune out what it does not (this issue will be discussed further in Chapter Four). The results reinforce the suggestion made earlier that mental patients are "just like us, only more so" in that they respond to pleasing environments positively, but out of necessity they ignore much that is ugly and unpleasant. In cities, where large numbers of discharged mental patients have tended to drift into ghetto areas (Wolpert and Wolpert, 1974), this conclusion might be one ray of hope in an otherwise gloomy situation.

An Aside: Checking the Inferences. As discussed in Chapter One, these kinds of conclusions must be scrutinized carefully. To argue for a geographical contribution to the study of recidivism in former mental patients, we must find out if the geographical predictions add to our knowledge about the dynamics of community adjustment. Do such predictions improve the overall ability to predict? Do they add any new information which was not available previously? Do they change the internal structure of the predictions? It is possible that the influences of the geographical variables are overshadowed or even subsumed by psychological and interpersonal variables.

To answer such questions, a final set of predictions was completed, using as independent variables all ten neighborhood dimensions and the two dimensions discussed previously, namely Plans and Abilities and the Family and Living Situation.[19] With all the dimensions used as independent variables, the patient's Family and Living Situation is still the major predictor, but Plans and Abilities is not included in the discrimination (Table 14). Two of the residential dimensions, Commercial/Industrial and Old and Lonely are also included in the final discrimination, but the Transience dimension is excluded. Neither dimension improves the overall percentage of correctly predicted cases, but their effect is not entirely subsumed by the Family and Living Situation dimension. Intuitively this finding suggests that both environmental dimensions describe influential characteristics, stressful in the case of Commercial/Industrial, and supportive in the case of Old and Lonely. Patients who do not have a supportive family might benefit from living in a low-key neighborhood of the type described by the Old and Lonely dimension.

In one sense these were disappointing results for geographers because it proved impossible to improve the prediction made by the Family and Living Situation dimension. On the other hand, it was encouraging to be able to predict almost equally well from vastly different data sources, especially as some of those sources include variables that are not usually considered in a study of this type. The results suggested that spatial variations in the characteristics of residential neighborhoods can be

[19] This final predictive model can be called the "ecological" model because it includes independent variables from radically different data sources. The stress index is not included as an independent variable because the influence is so strong.

TABLE 14. FINAL PREDICTIONS USING THE THREE NEIGHBORHOOD DIMENSIONS, FAMILY AND LIVING SITUATION, AND PLANS AND ABILITIES

Dimension Selected in Overall Prediction	d^2*	F Statistic	Significance
Family and Living Situation	.34	5.89	99%
Old and Lonely	.51	4.33	99%
Commercial/Industrial	.69	3.88	99%

* d^2 = Mahalanobis distance measurement

Overall Classification	
Nonreturners	
Correctly Predicted	21
Incorrectly Predicted	14
Total	35
Returners	
Correctly Predicted	26
Incorrectly Predicted	10
Total	36

Accuracy Rate 47/77 = 66.2%, x^2 = 7.01, Sig > 99%.

Source: Adapted from Smith (1975a).

shown to influence a measure of well-being in former mental patients. Although much work needs to be done to corroborate and validate these findings, it appears that even without data on a patient's diagnosis, prognosis, treatment, after-care, and family situation, it is possible to predict community outcomes significantly. More important than the predictions themselves are their implications. From these results a case can be made for including environmental considerations in the discharge decision-making process. A major advantage of such a conclusion is that a patient's living situation is often one of the easiest variables to manipulate. In the spirit of preventive mental health care, it is more practical and it may ultimately prove more effective to change an individual's living situation than to fight the long uphill battle of therapy designed to improve a patient's coping skills.

Although the geographical data do not improve the overall predictions, they offer some different solutions. The three environmental dimensions, Commercial/Industrial, Transience, and Old and Lonely, produced different types of predictions from those of either the Family and Living Situation or Plans and Abilities. As mentioned earlier, the environmental measures were more successful in predicting nonreturners to the hospital (twenty-five correct, ten incorrect) than returners (nineteen correct, seventeen incorrect). The structure of these predictions was similar to those produced by the Family and Living Situation dimension (twenty-eight correct, seven incorrect for nonreturners; and nineteen correct, seventeen incorrect for returners). The Plans and Abilities dimension, on the other hand, was more successful in predicting returners to the hospital, but in the final prediction, when this dimension dropped out, there was still a marked improvement in the prediction of returners. It is evident that a combination of the items included in the two environmental dimensions (Commercial/Industrial and Old and

Lonely), plus the items in Family and Living Situation dimension, gives a more balanced overall prediction. Without attempting a detailed explanation of such a result, it is sufficient to note that the ecological model of recidivism gives significant predictions for both groups. Such results might ultimately prove to be more useful in helping both the returners and the nonreturners in their attempts to adjust to living in the community. In case the reader feels the optimism suggested in these conclusions represents a geographical fallacy, it is important to discuss one final set of geographical hypotheses.

Hypothesis IV—Recidivism and Accessibility. The reorganization of mental health service delivery in most areas of the United States has involved a decentralization and regionalization of facilities. Going hand in hand with the reorganization is a strong belief that the use of community mental health facilities, and presumably also their effectiveness, is influenced by geographical factors, primarily distance and accessibility. Closeness to the facilities and a high level of personal mobility should be related to nonrecidivism in the sample of former patients. Presumably spatially isolated patients will benefit less from the community supports available, and they might be higher risk candidates for returning to the hospital. It is also possible that location relative to the hospital itself plays a role in determining patients' outcomes. As Smith (1976a) has noted, results from the available literature are equivocal. Closeness to the hospital may encourage recidivism, and it may also influence the hospital staff to release a patient sooner than would be normal for someone living farther away. If the distance and relative location hypotheses cannot be supported, some important conclusions can be made, both for geographers and for mental health planners, about the future location of community facilities.

Most of the patients who leave the hospital are referred for after-care in the community (see Table 6). The facilities for the patients in this sample are located in the downtown areas of three Michigan cities, Jackson, Ann Arbor, and Ypsilanti, and also at the hospital itself. Each patient is referred either to one or more of the facilities provided in the city closest to the patient's home, or to the outpatient unit in the hospital. For each individual in the sample two measures were used, distance from the residence to the State hospital, and distance to the downtown area of the closest city. The two measures represent the distance in miles the patient must travel to receive after-care treatment (see Smith 1976a).

In no instance could it be demonstrated that either measure of distance influenced recidivism in the sample. No significant differences on any of the dimensions (Table 7) could be detected between patients who lived close to the facilities and patients who lived far away. Furthermore, neither of the distance measures contributed to the prediction of recidivism in a "piece-wise" regression analysis. It is difficult to argue from these results that location relative to the distribution of after-care services has an important influence on recidivism. Similar results were found when the adjustment measure was used as a dependent variable, which indicates that distance does not appear to be an important determinant of either the use or the effectiveness of after-care facilities. To contribute in this area, geographers might need to consider variables other than distance and accessibility, including the mobility of former patients, the use patterns for different types of facilities, and the quality of the services offered in various locations. The findings reported in the previous section suggested that location per se may be of importance in influencing recidivism, but distance and relative location appear to have little or no influence. From results of this type it is difficult to argue for a further decentralization of mental health facilities in southeastern Michigan, and it is even possible that a duplication of facilities in the neighboring cities of Ann Arbor and Ypsilanti is economically wasteful. A conclusion of this type supports the suggestion made by Wolpert *et al.* (1975), that a further dispersal of satellite mental health centers is unjustified.

III. LOCATION AND WELL-BEING: SOME FURTHER EXPLORATIONS

You cut down elm trees to make institutions for the people who went crazy because you cut down elm trees.
James Thurber

The Geography of Need Satisfaction

The results of the recidivism study suggested that data describing the characteristics of the patients' residential surroundings could be used to predict which of them would stay out of the hospital. More generally we might consider the possibility that various elements of the physical environment can be related to human well-being. To what extent do where we live, where we work, and where we go for our vacations contribute to the way we feel? Is it possible to demonstrate that spatial variations in environmental characteristics contribute to well-being? If the answer to this last question is affirmative, as many people argue, the next line of investigation might be an attempt to discover why such relationships exist (Saarinen, 1976; Lynch, 1972; Sommer, 1974; Altman, 1975). Why, in the study reported in Chapter Two for example, would mental patients find some residential neighborhoods more therapeutic than others? And more important still, can these results be generalized to "normal" members of the population? An uncontroversial answer to the first question would be that variations in physical settings help or hinder the satisfaction of human needs. In other words, where mental patients live helps to satisfy some of their needs. A rural setting might satisfy the desire for peace and quiet, whereas an urban setting satisfies the desire for excitement or anonymity. As the discussion in Chapter One has indicated, in a test for such a relationship researchers must try to isolate the effects of certain environmental influences from other potential influences at the personal and interpersonal levels. To test for a relationship between urbanization and mental illness for example, we would need to control all potential influences on mental illness other than population size. Unequivocal results from such a study might allow researchers to suggest that living in small towns is more beneficial than living in large towns, and that, on balance, more needs are satisfied than are thwarted. In this chapter we shall begin with a discussion of the types of needs that ought to be considered, and how to conceptualize geographical research on human needs.

The needs that might be satisfied or thwarted by environmental characteristics are many, as Alexander (1969) has noted, and some categorization is imperative.[20] Calhoun (1970) felt that some needs are primarily self-centered, in that they help bring a sense of wholeness to an individual's life; the needs for survival, security, trust, belonging, choice, and personal identity are examples. Other needs are more related to the wholeness of the individual's surroundings, and these could include the ease of cognitive interpretability, or "legibility" to use Lynch's (1961) term, visual aesthetics, pleasure, challenge, mystery, complexity, and spaciousness. There is considerable overlap between the items in these two categories, which suggests that a contribution to the wholeness of an individual's surroundings would also contribute to personal feelings of wholeness. For this reason researchers who have studied human needs have traditionally fallen back on variations of Maslow's (1968) hierarchy of needs as a classification device. Calhoun (1970), for example, related a Maslow-type hierarchy of needs to different scales of human activity, as a tool for evaluating the degree of frustration or satisfaction resulting from ". . . being embedded in the environment and participating in it" (p. 18). Calhoun added two components to the traditional Maslow hierarchy, namely, cognitive and aesthetic needs, and the need for challenge and exploration, both of which are presumably sought after the individual has achieved "self-actualization" (Figure 9). In a hierarchy organized developmentally or temporally, this may be a questionable position because so few people ever reach the stage Maslow called self-actualization. It is also possible that many people reach out for aesthetic and exploratory peaks long before they come close to self-actualization.[21]

Calhoun's "levels of environment" axis begins with an all-encompassing item called "nature," and then shifts to an ascending spatial scale ranging from "self" to "world," on the assumption that:

[20] The term "environmental characteristics" in this context refers mainly to the physical parameters of an individual's surroundings. Some social or demographic measures can also be used as surrogates for physical characteristics, for example, the average income of residents in any neighborhood, which is usually related to the average size of the houses.

[21] Such reaching out could also be considered the alternative to self-actualization, sought because we realize self-actualization is an impossible goal. We have here an example of needs "leapfrogging," exemplified by the "Evel Knievel syndrome." See for example S. Z. Klausner (ed.), *Why Man Takes Chances* (New York: Anchor Books, 1968), particularly pp. 49–58, "The Last Blue Mountain," by C. S. Houston.

ENVIRONMENT - NEEDS MATRIX

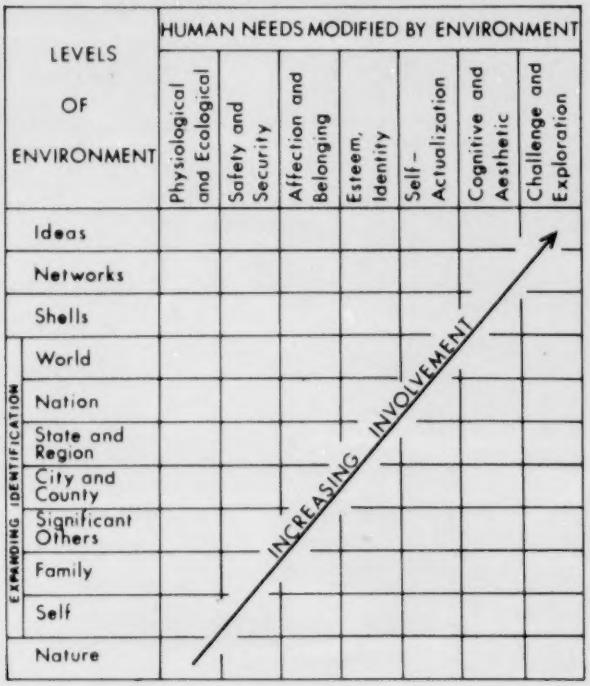

Figure 9. Environment-Needs Matrix. Source: Adapted from Calhoun (1970:15).

> Beyond himself each individual usually becomes involved in a series of increasingly more complex levels of social environment extending from the family to the world at large (p. 12).

Calhoun assumes that developing individuals gradually move up the scale and at each level can be found striving to satisfy their personal needs in more broadly defined spatial domains. The schema can also be applied to environmental policy making if each cell in the needs/environment matrix is related to a different set of policy recommendations. Architects or designers would need to translate Calhoun's environmental levels into spatial domains, such as dwelling units and neighborhoods, and then consider how the different needs suggest criteria for creating a more livable physical environment. Table 15 lists some of the design concerns in these two spatial domains, but as the reader can observe, the "needs" are slightly different from Calhoun's. Undoubtedly in the near future some geographers will have opportunities to investigate the physical parameters that influence the satisfaction of human needs. As a starting point it is important, therefore, to consider the issue of needs from the viewpoint of individual expectations and aspirations. A familiar context for geographers is the spatial choice mechanisms associated with selecting a new residence (Moore, 1972). Traditionally this work has used questionnaire data, but there are opportunities for unobtrusive work, as the following case study indicates.

A Case Study: Buying and Selling A Neighborhood

When realtors advertise a property they try to enhance the good points and minimize the not-so-good. Much of the selling strategy concentrates on the residential unit, but often a description of the neighborhood characteristics is thrown in for good measure. In these cases the information may be spatially bounded, describing, for example, the view from the kitchen window or the range of recreational facilities nearby. In other cases the information may be aspatial, describing the security or the type of neighbors potential buyers might expect to find. The information varies with the type of unit being sold, with the income and age group of the prospective buyers, and with the location of the property. Nevertheless, the descriptions used in advertising residential property give some indication of how realtors expect the property to enhance the quality of an individual's life. As in most advertising, the descriptions represent an idealized picture but we can assume they are based on elements of truth, embellished in varying degrees by subjective evaluations.

To investigate this idea further, the real estate pages in a sample of Sunday newspapers were scrutinized (Smith, 1976c). All housing advertisements were subjected to a content analysis, but only statements pertaining to the neighborhood were considered. No attempts were made to define "neighborhood," but it became apparent that any information which did not specifically describe the residential unit or the apartment complex should be considered. In general the search was for the adjectives and phrases used to describe the area in which the units were located. From the content analysis, a list of descriptive neighborhood features was generated and a small sample of them is reproduced (Table 16). The descriptions can be related to a variety of different needs and desires which would appeal to potential buyers, and some of these are also listed in the center column of Table 16. To organize the list of features and their related needs, the information is categorized hierarchically along the lines suggested by Maslow (1968). It is not possible to defend rigorously the categorization shown in the illustration and there is no hard evidence to link the items with any of Maslow's needs. Each of the described features could be related to the satisfaction of more than one need, so the table should be viewed only as a way of making sense out of a large and diverse set of needs.

In selling a property we can assume that realtors would like potential buyers to believe that living in a certain neighborhood would be beneficial in a number of ways. To substantiate their claims, realtors appeal to some of the needs which might be satisfied if buyers choose a realtor's property. In this way realtors actively sell the neighborhood, even though they may own only one or two of the residential units. The appeal to different types of needs was recently investigated in another study in which a number of realtors were asked to describe the sales tactics they would normally use in

TABLE 15. HUMAN NEEDS AND THE PHYSICAL ENVIRONMENT

	Needs	Dwelling Units	Neighborhood
Relatedness "Love"	Responsibility for and care of others	Safe and suitable designs for old and young people, provision of "normal" amenities	Segregation for vehicular traffic, noise, and pollution; safe and suitable for the old and young
	Respect for others	Possibility for personal privacy	Audial and visual privacy for each unit; respect for the wishes of others
	Knowledge of others	Possibility for family and group gatherings	Clubs, sports centers, meeting places
Transcendence —Sex	Reproduction —Sex	Privacy; pleasant and/or stimulating design; waterbeds?	Massage parlors, sauna baths, "singles only" apartments, meeting places
	Children's education	Audial and visual shelter; separate spaces for studying	Schools, churches, libraries, play areas
	Material objects and arts	Individual space for family members	Clubs, hobby workshops, exhibition space
	Ideas	Privacy to think and read in quiet	Libraries, schools
Rootedness	Brotherliness/ Sisterliness	Place and space for meetings, parties, discussion	Integration of different types of people; community centers
Sense of Identity	Individual Personality	Have alterations to suit personality	Development of democratic organizations, formation of lobby groups
Frame of Orientation	Thought System	Space to study and think; "quiet" rooms	Theater, concerts, libraries, universities
	Devotion objects	Cherished artifacts, trophies, paintings	Churches, football stadiums, prestige buildings

Source: Adapted from Misra (1970), as reproduced and adapted in Levi and Anderson (1975).

selling two identical houses in different parts of the city (Smith and Giles, 1975). The results of the study indicated that sales tactics are based, at least partly, on a subjective evaluation of how the neighborhood will cater to the needs of potential buyers. It was interesting to note that realtors adopted significantly different strategies for selling urban fringe properties than within-city properties. The results of the study suggested that buyers in the different locations expect their houses and neighborhoods to cater to different needs, and that the sellers are able to perceive such differences.

What can we learn from such investigations? When we buy a property we also get a piece of a neighborhood. We expect to like living in the neighborhood and we hope to benefit from it. Residential neighborhoods can cater to needs at many different levels (as Table 15 suggests). Some may only satisfy Maslow's "low" level needs for safety and security, but others may also offer "higher" level need satisfaction, such as an aesthetically pleasing environment or the opportunity to enhance one's individuality. A neighborhood catering to a wide range of needs, particularly those "higher" in the hierarchy, should provide a more therapeutic and humane living environment. To test such a hypothesis it would be necessary to find out whether the neighborhoods live up to buyers' expectations. Undoubtedly, in many cases we would find that the seller exaggerated the benefits and the buyer underestimated the disadvantages. A subdivision outside Ann Arbor, for example, may be referred to as ". . . paradise somewhere west of Detroit . . ." which of course it is, but it is other things as well! An apartment complex in Norman, Oklahoma might feature ". . . beautiful lots—surrounded by large trees and rolling hills . . .," both of which are rare commodities in central Oklahoma. Realtors are skillful at making something unpleasant sound like something tolerable or even desirable. An apartment complex in Dallas, at the junction of two interstate highways, can be described with complete honesty as "conveniently located with four-lane access in every direction." After buyers move in they may find that the advertisements were illusions, that the neighbors are not so friendly after all, and that the view is not nearly so attractive on a dull day. For reasons such as these, neighborhood selling tactics only approximate the actual benefits one might find in living in a particular location. Nevertheless, they provide an informal guideline and they give some indication of the visual and functional attributes of residential neighborhoods and the needs to which those attributes are related.

Research on Human Needs

If geographers interested in mental health problems are to pursue the idea of need satisfaction, they must overcome a number of problems. The major issues include the choice of a conceptual framework and the measurement of the different needs. One solution, suggested by French *et al.* (1974), involves a simple supply and demand model for investigating situations of person/environment interactions. French conceptualized the "fit" between individuals and their immediate envi-

ronments in terms of personal "demands" that need to be met by environmental "supplies;" and environmental "demands" that need to be met by personal "supplies." If we can measure both types of demands and supplies on the same scale, we can assess the discrepancies with relative ease. As an example, French *et al.* (1974: 317) quote the case of an office secretary looking for a new job, where:

> the excessive environmental demand for typing speed compared to the secretary's typing ability can be quantified in terms of words per minute.

French then proceeds to describe some of the major dimensions of mental health; concepts such as "contact with reality," "accessibility to the self," and "defense mechanisms," in terms of the supply and demand model. In a more specifically geographical context, we might consider the following application of that model: individuals living in high density settings may have strong desires for privacy, but at the same time they may fear cutting themselves off too much from other people (see also Altman, 1976).[22]

In many ways the model described in Footnote 22 is attractive. It is simple and in a planning context it suggests straightforwardly that researchers try to identify situations of poor fit between persons and environments, and then suggest how the fit can be improved. In the privacy example it might be preferable to train people to live in more crowded situations by working on individual problem solving and communication skills. In the short run, however, an easier and more effective channel of intervention would be an environmental manipulation such as a physical relocation or a change in building design.

[22] This situation can be reported objectively and subjectively as follows:

A) the *objectively* measured environmental supply of privacy = E^o priv.; the *objectively* measured amount of privacy required = P^o priv. The objective person-environment fit (F^o priv.) is the difference between the environmental supply and the person's needs, thus: F^o priv. = (E^o priv. − P^o priv.).

B) for any number of reasons, including incorrect information, distorted perceptions, personal characteristics, or societal norms, individuals' *subjective* reporting of the supply and demand for privacy (E^s priv. and P^s priv.) may be different from their objective reporting, thus: F^s priv. = (E^s priv. − P^s priv.), *and* F^s priv. ≠ F^o priv.

Using this notation, Jahoda's (1958) mental health concepts in the context of privacy can be expressed as follows:

1) *Contact with reality*—how closely the subjective report of the amount of privacy fits reality (R), *or* R = (E^o priv. − E^s priv.).
2) *Accessibility to the self*—the accuracy of the subjective report about the amount of privacy needed (A) *or* A = (P^o priv. − P^s priv.).
3) *Psychological strain* or *lack of adjustment*—will be indicated by a negative value of F^s priv.
4) *Coping*—implies changing the supplies or demands of the objective environment (Δ P^o priv.) or the abilities of the person, for example, the individual learns to handle interpersonal conflicts (Δ P^s priv.).
5) *Environmental mastery*—implies a manipulation of the environment, for example, the use of props to create a barrier, or the shutting out of some aspects of the environment (Δ E^o priv.).

In a recent conversation with Grady Clay, author of *Close-Up: How to Read the American City* (1973), we decided that the ability to ignore, or not to see, much of what is bad and ugly in the urban landscape is a common trait. We coined the term "landscape scotomas" to describe such adaptive (or maladaptive) behavior.

Geographers interested in how spatial variations can contribute to the satisfaction of human needs might attempt to identify the visual and functional characteristics in each of the different subspaces or "neighborhoods." The characteristics, or to use French's term, the "environmental supplies," could be ascertained from available data sources such as the housing census, air photographs, or Landsat imagery.[23]

The major problems would be encountered in trying to find a list of environmental characteristics that might be related to the satisfaction of different human needs; in defining the list of needs to be studied; and in measuring the needs, particularly to reflect the differences between the objective and subjective elements. In sum, the enormity of such an endeavor might prove to be overwhelming. The constraint of measuring environmental supplies and personal needs on the same scales would have to be relaxed, and it is evident that certain needs, for example the need for personal identity, would not conform easily to an empirical study. Certain useful and reliable instruments are available for measuring some of the items that are related to human needs, such as interpersonal trust (Rotter, 1971), personal efficacy and the internal/external locus of control (Rotter, 1966), learned helplessness (Seligman, 1975), the desire for aesthetically pleasing surroundings (McKechnie, 1970), and the need for complexity and mystery in the physical environment (Kaplan, 1974). In other research contexts human needs have been related to the physical characteristics of different living environments. In Appleyard and Lintell's (1972) study, for example, traffic densities were found to be related to the development and maintenance of community interaction and the level of environmental awareness. Hammerman (1974) investigated the formation of neighborhood lobby groups, which to some extent can be considered as surrogates of the need for affection and belonging, and found that the most coherent and eventually the most successful groups were developed in the most aesthetically pleasing neighborhoods.

Perhaps the best known studies that have attempted to understand the relationships between human needs and the physical environment are crowding and density studies (see for example Stokols, 1973; Freedman, 1975). In recent years, a vast amount of time and effort has been directed to studies in this area, and the results to date have been equivocal, with perhaps an overall indication that crowding is related only very weakly to pathology (Fischer, 1976; Fischer *et al.*, 1975).

There would appear to be adequate opportunities for geographers to delve deeper into the nature of the rela-

[23] Thus, for the visual and functional characteristics (C_i^o) in each of the different neighborhoods (i = 1,n) 1 through 'n', the overall characteristics (a through z) would be defined as:

$$\sum_1^n C_i^o = \sum_1^n (C_a^o, C_b^o, C_c^o, C_d^o, \cdots C_z^o)$$

For any resident (j) in a neighborhood (i), a subjective analysis of the neighborhood's characteristics (C_i^s) might provide completely different data ($C_i^o \neq C_i^s$). The total set of demands or needs of each individual (with N^o and N^s representing the objective and subjective estimations of need) would be composed of a summation of the many different needs described earlier

$$\sum (n_1^o, n_2^o, n_3^o, \cdots n_n^o) \quad \text{and} \quad \sum (n_1^s, n_2^s, n_3^s, \cdots n_n^s).$$

TABLE 16. SELLING NEIGHBORHOODS ACCORDING TO HUMAN NEEDS

	Examples of Neighborhood Descriptions in Advertisements	Related Needs and Desires	Maslow's Needs
1.	"finest shopping close to Detroit" "competitive rents" "only 42 minutes from New York City via New Jersey Turnpike" "save a fistful" "on a clear day you can see Big Boy"	Economy, Accessibility Spaciousness, Recreation, Convenience	Physiological/Ecological
2.	"Fox Briar Estates is trees, trees, trees. . . is Edmond Schools . . ." "great place to bring up the kids" "safe streets, safe neighborhood" "to keep you from turning green a 24 hour security patrol and staffed gatehouse"	Security, Safe for Children, Privacy	Safety/Security
3.	"a unique community, friendly neighbors" "creeks and wooded cliffs" "rambling stone walls and open meadows . . . Canadian geese and clear skies" "rustic elegance . . . On a Sunday afternoon you see more horses than cars"	Sense of Community, Neighborliness, Friendship, Trust, Close to Nature, Aesthetics	Affection/Belonging
4.	"prestige living in the fashionable sixties" (New York City) "we only look expensive" "quality . . . and then some" "dream neighborhood . . . luxurious"	Luxury, Quality, Status, Elegance, Excitement	Esteem/Identity
5.	"live in a real townhome community, in town . . . in Dallas' prestigious eclectic neighborhood" "avoid houses built in patterned conformity" "the best of everything" "where you would like to spend the rest of your life"	Individuality, Distinctiveness	Self-actualization

tionships between persons and their environmental settings. In the context of mental patients living in the community, we still need to answer many questions, and the answers can come only from rigorous and painstaking study. In the meantime, it is advisable to consider other possible explanations for environmental influences on measures of mental health. Following the suggestions in the Introduction for geographers to sharpen their skills as describers, prescribers, and perhaps explainers, it is appropriate to consider some of the social and institutional barriers to the maintenance of mental health in the community. We would commit a series of fallacies, both geographical and psychological, if we did not consider community attitudes and the role of public acceptance and rejection in the treatment of mental illness.

The Geography of Social Inclusion and Exclusion

The award-winning magazine, *Texas Monthly*, carried a story about Texas Governor Dolph Briscoe in its February 1976 edition. The story added fuel to the pervasive rumors about Governor Briscoe's mental health, suggesting that he:

1) periodically suffers from severe bouts of depression;
2) between 1968 and 1972 underwent psychiatric treatment several times;
3) during his term of office continued to receive such treatment at an out-of-state medical facility; and
4) is habitually maintained on mood-regulating drugs.[24]

The author of the article mentioned at the end that Briscoe's problems should be kept in perspective:

> Psychiatrists estimate that 15% of the American people suffer from various types of medically recognizable depression. Though the electorate has a right to know if a public servant is unwell—and a right to receive straight answers when it asks—there is a growing awareness that psychiatric care should not, by itself, be a cause for shame (G. Smith, 1976: 87).

Mental illness should not be a cause for shame, but it usually is, and one wonders why the story was written if the author believed his last statement. The Governor of Texas is a special case, but the story indicates how difficult it is for persons to slough off the stigma of once being labeled mentally ill. Stigma adds an extra dimension to the problems encountered by someone suffering from mental illness, and in this section we shall investigate the nature and consequences of stigma. We

[24] There is no way of estimating what percentage of the population could also be accused on any or all of these four counts. The story is similar to those about Thomas Eagleton in 1972, with the exception that Briscoe is already in office. For an unusual and horrifying account of the Eagleton affair, see Hunter S. Thompson, *Fear and Loathing on the Campaign Trail, 1972* (New York: Popular Library, 1973).

shall observe that stigma is more than just a problem for the mentally ill and other "undesirables." In a more general sense, stigma is also the foundation for a system of human classification that plays an important role in regulating interpersonal behavior, and one that may also prove to be important in social geography as a key mechanism influencing mobility and patterns of spatial allocation.

To begin a discussion of the geography of inclusion and exclusion, it is important to consider three general questions:

1) What is stigma and what influence does it have on the social and spatial dimensions of interpersonal behavior?
2) How do groups and communities (the public) view stigmatized individuals and facilities, and in what ways do public attitudes vary across space and through time?
3) What types of institutional and community treatment are available for stigmatized persons, and how are recent shifts in public policies likely to alter the provision of care for the mentally ill (or other stigmatized groups)?

The Nature of Stigma: Those Who Can, Do . . . Those Who Can't . . .

With this world being such a complex place to live in, it became necessary long ago for people to categorize the animal, vegetable, and mineral phenomena all around them. Categorization is a normal human activity that makes the world smaller, tidier, and easier to comprehend. Categories help us locate in our heads the objects and concepts important in our everyday lives, and to separate them from others that are redundant. For geographers, categorization of places has been a normal activity, and by adding human beings into the categorization we have been able to divide up the world into places containing people like us and people not like us. Or, using geographical analogies, the categories may be distance-based, such as near and far; center and periphery; city and suburb.

There are many possible bases for social categorization, but one which has been more pervasive than all others is a division based on measures of ability. In any setting there are literally those who can and those who can't—the apt and the inept. One of the more interesting dictionary definitions of ineptitude is "out of place," and if we assume that society has an obligation to find a place for the inept person, two different tactics are available, namely inclusion and exclusion. Inclusion is common to many social systems. It involves a variety of devices to protect and shelter the inept members of the group. Social clubs, trade unions, and university tenure systems are examples of inclusionary devices. Exclusion is normally reserved for the more inept members of any group, the mentally ill, the retarded, and, least desirable of all, the criminals. People in these groups may not necessarily lack education or skills, but they lack the important ability to be "just like us." Their difference demands that they be kept separate from us. They can be completely excluded by institutionalization, or, in less extreme cases, the old, the poor, and the ethnic minorities can be excluded by a variety of subtle and not-so-subtle means such as poor bus services, six-lane expressways, and high interest rates on mortgages.

Exclusion is normally far less humane as a form of societal action than inclusion, but the reasons for inclusion and exclusion are similar, only the means differ. The inept are included to provide protection for themselves, to protect others from them, and to enhance the self-esteem of the includers by making them (or us) look favorable in comparison to the includees (Goode, 1967). The major difference between inclusion and exclusion as devices for handling the inept is that we include to assuage our guilt, whereas exclusion usually makes our guilt greater. Recent trends in the institutional policies of state mental health and corrections departments have involved efforts to include previously excluded persons by rehabilitating them, finding them a place in the community, and perhaps most important of all, helping to relieve our guilt about all the years of exclusion and confinement.

Ineptitude may be a quantitative handicap. If persons are only a little inept they may not be stigmatized, but high levels of ineptitude can usually be dealt with only by exclusion. It is also possible that certain types of stigma are not related to ineptitude in terms of abilities, but are definitely related to ineptitude defined as "out of place" and "different." Facial abominations, bizarre behavior, and thievery are unacceptable, and as Goffman (1963) has observed, such characteristics facilitate the formation of negative attitudes. When these attitudes obtrude onto a relationship, stigma is present and is acting as a strong categorization device. On first contact with another person, we normally establish a schema of expectations by imputing certain values onto that person. Normally we define the imputed values by what we want the other person to be, in other words, by what we expect them to be. Their actual values, skills, and characteristics may fall short of the imputed and stereotyped values. In the case of mentally ill persons the credibility gap is caused in part by a fear of unpredictable and potentially dangerous behavior. Whether mental patients actually are dangerous is unimportant because the stereotypes are strong enough to inhibit social interaction. Most people are unwilling to enter into a relationship with a stigmatized person, a tactic which serves to perpetuate the stereotype. Stigma therefore implies an unwillingness to come closer to other people in a psychological sense and, literally, in a spatial sense. Stigma is an unwritten language, embodied sometimes in physical appearance but more often in labels and stereotypes, which serves to regulate interpersonal behavior. Persons with a stigma are expected to know their place, and if they do not, society will act to remedy the situation.

Altman and Taylor (1973) have outlined a schema for conceptualizing interpersonal relationships with stigmatized persons. If we think persons have stigmas, we are less likely to strengthen our ties with them. In the first place, we are unwilling to increase the breadth of the relationship, and we limit the number of different topics we are willing to discuss with them (Figure 10). We may allow the conversation to stray from section A, the

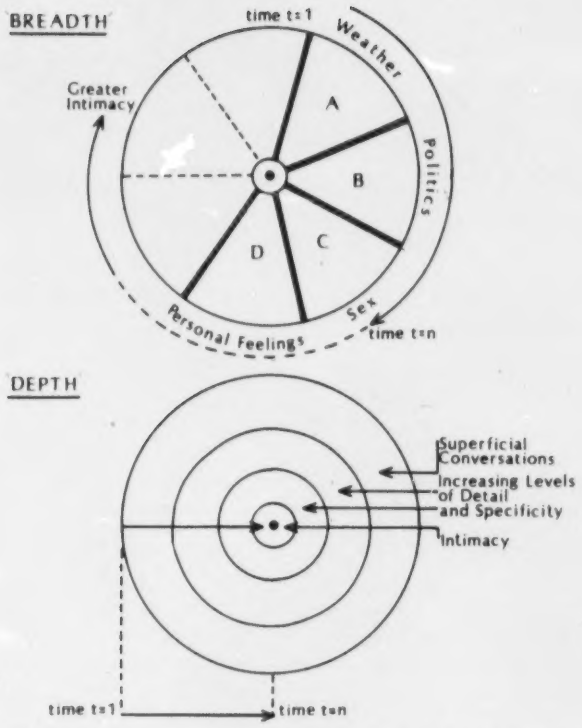

Figure 10. Representations of Breadth and Depth in Interpersonal Relationships. Source: Adapted from Altman and Taylor (1973:28).

weather, to B, politics, but sex and personal feelings would be forbidden territory. At the same time, a reluctance to allow a relationship with a stigmatized person to develop beyond a superficial depth may tend to limit the content and length of each interaction (Figure 10). Altman and Taylor (1973), and Altman (1975) have used this schema in discussing how the character of interpersonal relationships influences the spatial behavior of people in groups. Although the topic cannot be pursued in this context, geographers and others interested in proxemics research might look further at the intragroup spatial behavior of stigmatized persons, and also at the spatial behavior of "normal" persons who come into contact with stigmatized persons.

Stigma and Public Attitudes

Most of the research on public attitudes toward the mentally ill has included attempts to measure the amount of social distance people like to keep between themselves and a stigmatized person. In a typical study, the subjects are asked to estimate how close they would choose to be to a person who is mentally ill. The usual choices include:

1) I would not hesitate to work with someone who has been mentally ill.
2) I would be willing to sponsor a person who had been mentally ill for membership in my favorite club or society.
3) If I owned an empty lot beside my house, I would be willing to sell it to a former mental patient.
4) I would be willing to room with someone who has been a mental patient.
5) We should strongly discourage our children from marrying any one who had been mentally ill.
6) I can imagine myself falling in love with a person who had been mentally ill.

As Crocetti *et al.* (1974) have argued, recent evidence suggests that in the last fifteen years public attitudes to stigmatized persons, and particularly to the mentally ill, have improved significantly. Aviram and Segal (1973) reviewed the results of the social distance studies carried out since Cumming and Cumming's (1957) pioneering work, but they detected only a slight trend toward higher acceptance of the mentally ill. Almost all of the recent studies show that respondents say they are willing to live next door to a mental patient (item 3 on the social distance questionnaire), but that they would be unwilling to room with one (item 4). More positive attitudes toward the mentally ill would be a hopeful sign for their treatment in the community. The implication from much of the literature is that by increasing the amount of information available about mental illness, attitudes can be altered substantially (Crocetti, *et al.*, 1974), but to date the evidence remains contradictory. Some researchers have claimed that real acceptance is not increasing, simply that a greater proportion of respondents are saying they would react more positively to a mentally ill person. This involves the age-old problem of a substantial discrepancy between attitudes and actual behaviors (Liska, 1974; Warner *et al.*, 1969). It is possible, as Bord (1971) has hinted, that actual behavior toward the mentally ill has improved very little since the deinstitutionalization process began. Bord's study indicated that the prospect of coming into contact with a former mental patient might actually increase the tendency for them to be rejected. Gove and Fain (1973) on the other hand found little behavioral evidence of community rejection in a longitudinal study of former mental patients, and they used the results of the study to suggest that negative stereotypes of mental illness are based on abstract cases and descriptions. In contact with a real person who has been mentally ill, the public might not discriminate seriously. According to Gove and Fain, the "once crazy always crazy" argument about mental patients may be only partly operative, a conclusion which could be of major significance to the community mental health movement. In this vein Swanson and Spitzer (1970) have suggested that the effects of stigma decline over time; in other words, that stigma has a temporal career, as Goffman (1963) has argued. We need to ask ourselves whether stigma has a spatial career, and whether it is still operating in our own communities. Geographers, as Wolpert (1976) has recommended, could find interesting and useful avenues for research in this context. Public attitudes to stigmatized persons will be one of the most important factors in treating the mentally ill in the community in the next few years, and it will be useful in the next section to consider, if only briefly, some of the major determinants of attitudes and attitude change.

Aspatial Influences on Attitudes. As Becker (1963) has observed, the amount of stigma attached to an individ-

ual depends on those doing the evaluating and their frame of reference. One person's evaluation of another depends on "where" that person "is coming from."[25] Campbell (1967) has shown how the Hidatsa Indians in the Dakotas and the local "pale-faced" ranchers evaluated each other (Table 17). The Indians were carefree with money, a trait they considered to be positive but which the ranchers felt was improvident. The ranchers in town thought of themselves as thrifty but the Indians called them hoarders!

The evaluation of other persons depends largely on how different we perceive them to be from us, and perceived differences may be affected by: the predictability/unpredictability of behavior; perceived threat and hostility; physical deformity; skin color; and language differences (Kidder and Stewart, 1975). A further determinant of attitudes is the role of attitudinal set, which is extremely difficult to break down, particularly when attitudes are fixed at an early age. Voting behavior is an appropriate example.[26] When individuals choose a party, a candidate, and a set of policies, all subsequent information contradicting their current viewpoint is screened and subsequently excluded from their considerations. Newcomb (1947) referred to this phenomenon as "autistic hostility," a term which is appropriate in the case of mental illness because the evidence suggests that opinions are set at an early age. At least one study has demonstrated that knowledge about mental illness is severely limited in people with strongly negative attitudes (Fracchia *et al.*, 1976), and that what knowledge exists is often distorted by fears of violent behavior. Fear of the unknown is a fundamental human concern and one that can be alleviated only with great difficulty. Tershakovec (1964) extended this theme by arguing that stigma attitudes reflect our emotional self-images. Going back to Freud for circumstantial evidence, Tershakovec concluded that humans would like to think of themselves as omnipotent, a belief that is seriously threatened by the existence of mental illness in others and the fear of it in ourselves. This concept is a little farfetched, but some researchers believe that attitudes are layered vertically, with everyday attitudes structurally related to deeper-rooted feelings (Bennett, 1972). Bruner (1957) corroborates this notion in his suggestion that many of our best research ideas can be traced back to deep-rooted human concerns and feelings. If this is the case, there can be little cause for optimism in the mental health field unless one happens to believe in the basic goodness of all humans. It is particularly disturbing to find that in at least one study of attitudes toward the mentally ill, rejection was significantly correlated to what may be structurally deeper-rooted feelings of ethnocentricity and racial superiority (Mulford and Murphy, 1968).

[24] This is terminology which I, and most mental health workers, loathe. But it is fitting, and very geographical!

[25] Or at least it seems like an appropriate example. Jimmy Carter's smile was important to many victories in the primaries and subsequently to his election to the Presidency. Even Hunter Thompson (*Rolling Stone*, June 3, 1976, "Third Rate Romance, Low Rent Rendezvous") admitted liking Carter. He was subsequently fired from the magazine, perhaps because of this statement, but more likely because of his extraordinary working habits.

TABLE 17. STEREOTYPES AND THE PERCEPTION OF GROUP DIFFERENCES

	Descriptions of:	
	HIDATSA	RANCHERS
	(Good)	(Bad)
HIDATSA	Generous, unselfish, share good fortune with family and friends	Stingy, selfish hoarders
Descriptions by:		
	(Bad)	(Good)
RANCHERS	Spendthrifts, improvident	Thrifty, provident

Source: Campbell (1967:822).

For mental patients living in the community these are gloomy observations because they suggest that they would find more acceptance by living incognito.[27] Philips (1963) demonstrated that rejection was more likely if the subjects in his experiments knew that a person had been mentally ill. Rejection increased consistently from the lowest point, a person who had been mentally ill but who had never sought treatment, to the highest point, a person who had actually been hospitalized. In ascending order the middle positions of rejection were: visiting a member of the clergy for counseling; visiting a physician; and visiting a psychiatrist. Philips' results suggest that mental health professionals who are themselves in therapy would be wise to conceal such information from their patients. Perhaps the best advice to former mental patients is that they do likewise, a phenomenon known as "passing" (Olshansky, 1962). If they do not pass, the consequences may be serious, as a recent study in Philadelphia demonstrated.[28] In job interviews people who had experienced some type of mental illness were more likely to be employed if their potential employers knew nothing about the illness. In a study of job promotions, mental illness produced more negative responses than other stigmatized characteristics such as bodily abominations, wearing a long beard, or smoking marijuana on weekends.[29] The effect of stigma in employment situations could have seriously regressive consequences. For example, the knowledge that a history of illness is damaging could inhibit people from claiming insurance reimbursement from their employers to pay the bills for mental health care. No such stigma is attached to physical ill-health, and perhaps most ironically, psychiatrists can write off as a tax deduction the eighty dollars per hour they pay for psychoanalysis. Few people are fired for physical illnesses, but how many of us know of cases where persons were fired because they had sought treatment for some psychiatric illness?

[27] As my colleague, James Bohland, pointed out, however, the desire to live incognito may not be altogether a gloomy observation. It may help, for example, to explain why the Old Old Lonely neighborhood is a good place for patients to recuperate.

[28] *Dallas Times Herald*, July 6, 1975.

[29] As in most research studies, nobody is expected to smoke marijuana on weekdays!

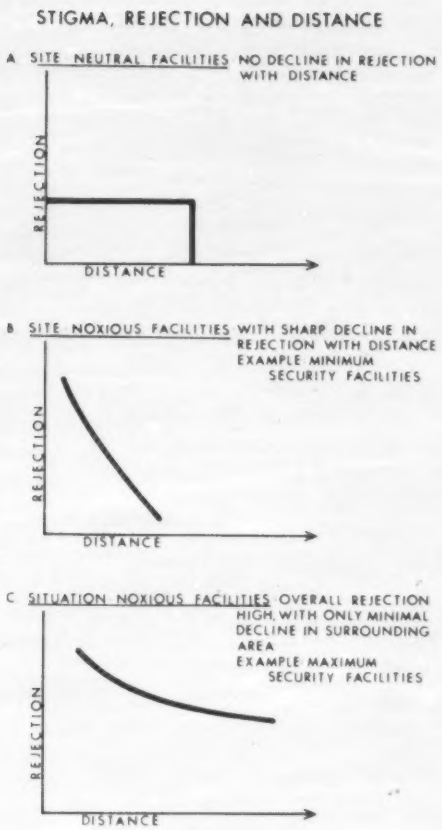
STIGMA, REJECTION AND DISTANCE
A SITE NEUTRAL FACILITIES NO DECLINE IN REJECTION WITH DISTANCE
REJECTION
DISTANCE
B SITE NOXIOUS FACILITIES WITH SHARP DECLINE IN REJECTION WITH DISTANCE EXAMPLE MINIMUM SECURITY FACILITIES
REJECTION
DISTANCE
C SITUATION NOXIOUS FACILITIES OVERALL REJECTION HIGH, WITH ONLY MINIMAL DECLINE IN SURROUNDING AREA EXAMPLE MAXIMUM SECURITY FACILITIES
REJECTION
DISTANCE

Figure 11. Stigma, Rejection and Distance.

In an experimental context, Farina *et al.* (1976) reported some findings that support the need for passing. Once the mentally ill subjects became aware that observers knew of their illness, they began to feel less appreciated, they found their tasks more difficult, and they appeared more anxious. Perhaps honesty is not the best policy, and advice from the Gay Liberation movement for homosexuals in their thousands to come out of their closets and identify themselves, may be premature and even misdirected (Sagarin, 1976).

Spatial Influences on Attitudes. Location can greatly influence stigma and the perceived presence of stigma. When the mentally ill are locked up in remote hospitals, their stigma is a theoretical issue, but if a man takes off his clothes and urinates in a department store he will be stigmatized immediately, then arrested. In less extreme cases it is evident that the perception of a stigmatized person is place-bound. Someone with a "spoiled identity" (Goffman, 1963) should appear only in a "spoiled" place, in other words people should know their places. Appearing in a "prime space" (Duncan, 1975), such as an exclusive residential neighborhood, instead of a "marginal space," like skid row, the stigmatized person will immediately attract attention. Fortunately many "deviant places" exist (Lofland, 1969), some because no other people want to be there, others because walls and fences serve to keep out the curious. Although a downtown shopping mall may be the worst place for a deviant to be, there are many inner city neighborhoods where people have eyes but few are looking and even fewer could care what one individual does.

We know very little about the spatial components of negative or positive attitudes toward stigmatized persons and the facilities in which they are housed.[30] It is appropriate therefore to suggest some hypotheses. Perhaps the most feasible hypothesis is that attitudes vary inversely with distance from the stigmatized facility. People living closer to the facility will be less accepting than others, presumably because they are more likely to come into contact with the objects of their fear and loathing. Figure 11 illustrates the relationship between distance and rejection attitudes, with the shape of the curve varying with the type of facility. Figure 12 shows a

[30] Almost no work has been done in the area of attitudes toward stigmatized facilities. From personal experiences with mental hospitals and after attending several public hearings to choose sites for a new prison in Oklahoma, I would suggest that such facilities assume the stigma of their worst, most violent, and most unpredictable inmates. This type of "blanket stigma" is very damaging to a facility, and partly explains why many correction systems categorize facilities by the amount of security needed.

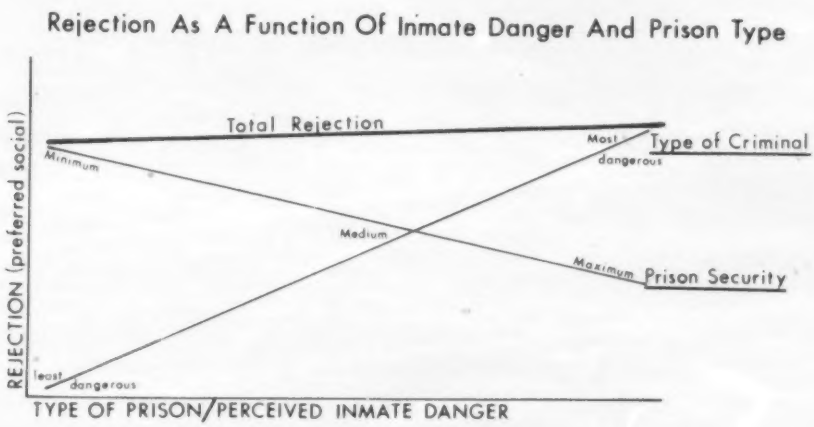

Figure 12. Rejection as a Function of Inmate Danger and Prison Type.

hypothetical example where the stigma associated with inmates of differing levels of threat is offset by the knowledge that the building is a maximum security facility. Although no attempts have been made to date to compare the stigma associated with different types of facilities, most observers agree that rejection is higher for criminal and forensic institutions than for minimum security community treatment centers and mental health clinics. On the other hand, the community facilities are less secure. Although the persons inside are less dangerous than persons in the state penitentiary, they are more likely to escape!

The hypothesis (somewhat modified) that "distance makes the heart grow fonder" implies that people may accept the mentally ill more if they do not have to think about or see them too often. In a pioneering study Rothbart (1975) was able to demonstrate a weak positive relationship between acceptance and distance from a criminal halfway house. By controlling for contextual effects, which in this case were overall liberal attitudes, Rothbart found the relationship held firm, which was encouraging for further studies along similar lines. If the results of such studies corroborate Rothbart's findings, the implications for siting mental health facilities (or other noxious facilities) would be of major importance. The host community and the neighborhoods closest to the facility should theoretically be the most accepting, and in the case of mental health care they should also provide a majority of the clients. As is often the case in siting public facilities, certain neighborhoods tend to become "oversaturated" (Wolpert *et al.*, 1975), and that satellite mental health centers are often found in such neighborhoods suggests that the role of community acceptance is working in reverse. Neighborhoods with the least ability to oppose are often chosen as sites for noxious facilities, a locational device which is alien to the concepts of service delivery, and contradictory to the goals of community mental health.

The distance hypothesis can be challenged by its exact opposite, the assumption that people living closer to a mental health facility will be more likely to hold positive attitudes. These people have potentially the best and the most accurate information about mental illness, because they are more likely to encounter mental patients. They may have some fears but statements of the type ". . . I've lived here twenty years and nothing bad has happened," would work to counteract the fears of unpredictability and violence. Corroborating, although undeniably slim, evidence for this hypothesis was provided in Dear's (1974) study of community mental health facilities in Philadelphia. Dear found no significant decreases in property values close to the facilities and no marked tendency for excessive property turnovers. Although these measures are but crude surrogates for stigma, few viable alternatives are available.

The notion that with time even the most fearsome possibilities will be dissipated may also prove to be important for locating noxious facilities.[31] A corresponding hypothesis involves the idea of "disaster leagues" (Runciman, 1966), which suggests that immediate proximity to a noxious facility invokes less stigma than living in the same town but not living close to the facility. The "disaster league" idea was developed in studies of natural disasters, particularly earthquakes. People living above the epicenter or at the point of maximum earthquake damage do not always perceive their situation as badly as people living further away. At the epicenter people whose property was badly damaged but who are still alive may feel lucky. People living close to but not actually in the area of maximum damage may consider themselves worse off because they compare themselves unfavorably with people living outside the damaged area. People living close to a mental hospital or a prison may view the facility as less stigmatized than people living in the same town but out of immediate contact with the facility (Figure 13). Relative deprivation studies (Sears and McConohay, 1970; Ransford, 1968) and comparison level studies (Thibaut and Kelley, 1959) have indicated that the evaluation of one's situation depends on what has been experienced in the past, and spatial proximity may prove to be a surrogate of experience levels. The people closest to a noxious facility may have a more realistic opinion about the actual level of noxiousness than people who do not come into daily visual contact with the facility.

A "DISASTER LEAGUE" VIEW OF STIGMA

Figure 13. A "Disaster League" View of Stigma.

Behaviors and Actions: What Do We Do With Stigmatized Persons? Over time society has established complex institutional systems to exclude the mentally ill, involving the police, the courts, and the mental hospitals. In varying degrees such systems also operate for other stigmatized persons, notably the mentally retarded and the criminal population. As the emphasis shifts gradually away from exclusion and the institutional systems are decentralized, new facilities are being provided in community locations. The purpose of decentralization is to prevent further exclusion and to begin including people who were previously defined as deviant. As Wolpert (1976) has observed, such a program requires a firm commitment to the notion of community, which he defined as the opposite of confinement. Living in the community need not imply that such persons have maximum

[31] There is some evidence that time "heals" stigma. For example, in Dallas County, Texas, a minimum security prison eighteen miles south of Dallas was initially strongly opposed, but recently a residential subdivision has been built adjacent to the prison. This example was reported in the Indian Nations Council of Governments (1976) report on the Mayor of Tulsa's Site Selection Committee for a new prison in the Tulsa area.

contact with normal members of the community, or that they should immediately expect to live a normal life. In many cases the expectation that one should behave in a normal fashion may add considerable pressure to the already overburdened patient.

Another issue of current interest is the question of living situations. Many observers feel that living in the community should involve living in noninstitutional settings such as apartments, room and board houses, or hotels. It is felt that such living arrangements are more conducive to a swift adjustment to community life, much more so than sheltered halfway house settings that are often more like the institution than the community. As noted previously, however, what is essential for a successful community mental health program is a commitment to the idea of community and a gradual lessening of the stigma attached to mental illness (Lamb and Goertzel, 1971). For a community to be therapeutic it is not necessary that the patients live close to friends and relatives or in normal community settings. What may be more important is that they have freedom and solitude when they want it, and that they also have options—something to do, somewhere to go, and someone to care for them if and when they feel it is necessary. Community in this sense has two major requirements: one is the passive requirement for a more accepting public; the other is a more active requirement for help, for mutual aid, for volunteer work, and for the provision of "natural neighbors" in the community (Collins and Pancoast, 1976). For this definition of community the results of the social distance studies reported earlier may be an optimistic sign. It seems a little too much to expect people in the community to live with former mental patients or with any other stigmatized person. All that is necessary is that members of the community are willing to allow such persons to live in their midst (the passive role), and then to hope that some members will identify themselves as "natural neighbors" and helpers (the active role).

A survey of the progress made toward community treatment for the mentally ill has demonstrated that in many parts of the country the new policies have not always been successful in preventing the exclusion of the mentally ill.[32] As Aviram and Segal (1973) and the Wolperts (1974; 1976) have shown, some unfortunate spatial biases exist in the pattern of residential locations of former mental patients. These biases have caused some observers to describe a "back wards to back alleys" analogy, suggesting that the closing of one major exclusionary channel, the mental hospital, has brought about the opening up of new and different exclusionary channels. Perhaps we should expect this if we accept stigma as a descriptive label to ensure that persons know their places. It has always seemed natural for us to banish people to their "rightful" places, whether it was the British to Australia and America, Indians to Oklahoma, or Blacks to ghettos. For mental patients a variety of alternate routes of physical exclusion can be identified, particularly in California and New York; for example: the removal of the mentally ill from certain residential areas; the prevention of entry into certain neighborhoods; stricter city ordinances preventing the opening up of new board and care homes; and a combination of stalling, red tape, and other bureaucratic maneuvers to slow down the inclusion of mental patients in certain neighborhoods. As Aviram and Segal (1973) have noted, more subtle and more insidious are the nonphysical forms of exclusion, what they called mechanisms of social exclusion. In California they observed that board and care home operators have often chosen to maintain stable populations in their homes, partly for economic reasons and partly to protect the former patients from a potentially hostile community. For this reason, many of the homes quickly become miniature versions of the mental hospitals they have replaced. Aviram and Segal also hinted at a sinister link between the home owners, mental health workers, and the pharmaceutical industry. Keeping patients in homes makes it easier to administer medication, which in turn ensures a docile and stable population in the community facilities. The use of drugs as a vehicle for social control is relatively unexplored, but is an area which ought to be investigated more closely.[33]

Even with careful plans for the inclusion of the mentally ill in the community, the process will be a long, uphill struggle. The situation calls for a major research effort into the physical and social mechanisms operating to keep the mentally ill excluded from the mainstream of community life. Wolpert's (1976) Presidential Address to the Association of American Geographers issued the challenge to geographers interested in the dynamics of community support systems, and those of us in search of relevant work might consider the challenge seriously.

[32] To date most of these surveys have been done in California, a state that has led the way in deinstitutionalization, often with very unfortunate consequences. In the field of corrections, a similar survey shows that it has been even more difficult for communities to adopt more accepting attitudes to criminals. See for example, Zdorkowski and Smith (1976).

[33] In a recent paper this author has discussed the use of controls in different institutions, two in particular—mental hospitals and universities. See Smith (1976f).

IV. THE SEARCH FOR EXPLANATIONS

Occasionally our studies present us with questions to which we would like to devote more time. A research article or an unusual result sends us scurrying to the library to learn more. We usually get cold feet halfway through the task, mainly because it is not appropriate to wander off into outer space, or perhaps because we simply do not have the time to become properly acquainted with a new body of literature. With too many other things to do and too few jobs for people with esoteric specialties, most of us tend to keep to the straight and narrow, leaving more interesting topics for future studies which rarely materialize.

Writing this Resource Paper has provided an opportunity to look further into such topics. The study of mental patients living in the community raised questions about the nature of an environmental influence on mental health, and about the different ways society deals with stigmatized persons. We have discussed these questions, and although they may not have been answered satisfactorily, the process has been sequential, from description to possible explanation, and from the general to the specific. Chapter Three suggested that a logical next-step after a study of environmental influences on mental health was an investigation of the relationships between environmental characteristics and the satisfaction of human needs. If significant relationships could be established, the next questions would ask why such relationships exist, and what happens between the stimulus (environmental characteristics) and the response (mental health outcome). Those geographers who have embarked on research in such areas have already found that they have been led away from the core of their discipline. For example, forays into perceptual and cognitive explanations of human behavior have now become commonplace among geographers (Downs and Stea, 1973; Saarinen, 1974), so common in fact that one observer has remarked that cognitive map studies may eventually prove to be the natural successors to factorial ecologies in the geography journals (Dear, 1975).

The study of mental illness in the community raised some intriguing questions about what actually occurs inside the head when a person tries to adapt to a particular set of environmental characteristics. The answers to such questions depend on the type of theory the researcher wishes to test, and to date the popular theories for geographers have been cognitive/information theories or some application of personal construct theory. In this chapter, we will consider two different types of theory. The first section describes the physiological concept of neural inhibition and its potential role in guiding adaptive behavior. The second section goes to the other extreme, to the neo-Freudian school of psychologists who have searched for explanations in the concepts of ego boundaries and ego organization. The purpose of the chapter is to gain some insight into the mediating processes involved in adaptation. In other words, what happens inside our heads to help us cope with a crowded subway train or with a bloody war raging on our doorstep?

The Context: How to Tune in the "Nice" and Tune out the "Ugly"

In the national and local media we are reminded daily about the miserable state of the world we have created. We are short of oil, change is occurring faster than we can respond to it, our privacy is constantly bombarded, and most of us have either too much or too little work to do. The cities we live in are often ugly and noisy, and the countryside is endangered by the people who are trying desperately to capture the romantic idyll of rural life. We are fast approaching what the futurists of the fifties and sixties predicted. As Dubos (1968:278) warned, we seem doomed to live amidst

> Starless skies, treeless avenues, shapeless buildings, tasteless bread, joyless celebration, spiritless pleasures—a life without reverence for the past, love for the present, or poetical anticipation of the future.

Incredible though it may seem, most of us are able to make the adjustments needed to get along in the type of world Dubos described. It is possible that we do not perceive visual blight and other forms of pollution as directly stressful, or that the stress they induce is insignificant in comparison to the social and psychological stresses associated with merely getting along from day to day. Instead of being undesirable, inner city characteristics such as social disorganization and impersonality may actually provide comfortable settings for the socially inept or bizarre person. No matter how strange your behavior, you go unnoticed. You live, as one observer has remarked ". . . a life of small freedoms away from curiosity and censure" (Raban, 1974: 201).

If city living is as bad as many observers would have us believe, why are there not a million or more homicides in New York every year instead of fifteen hundred? Why, the opponent of ecological inference might ask, does not everyone living in a crowded and polluted city suffer identifiable psychological or physiological impairments? Why was it that not all the patients living in Commerical Industrial and Transient neighborhoods had to return to the hospital (Chapter Two)? Why do some residential settings appear to have a positive influence on staying out of the hospital, while others, mostly unpleasant settings, appear to have little or no influence? These are important questions that demand

answers. We seem to respond positively to pleasant environments, but how are we able to ignore the supposed evils taking place in the world? Do we simply close our eyes, or do we make a series of psychological and physiological adjustments when faced with a difficult situation? The supply and demand model of coping described in Chapter Three offers one possible explanation. Unfortunately, the simplicity of the model is also a weakness because it assumes uniform and sensible behavior from human beings who are more prone to react in a variety of ways, many of which are unpredictable. People are unpredictable for many reasons: they are influenced by different drives; they are controlled by unique physiological and neurological mechanisms; and they perceive the same situation in a number of ways. In the remainder of this chapter we shall investigate the first two of these explanations for human vicissitudes.

Inhibitory Control Mechanisms as Human Coping Behavior

One of the most perplexing questions arising from environmental studies of mental health is the apparent ability of most individuals to screen, shut out, or ignore the stressful events they face in everyday life. The field of neurophysiology offers a tailor-made explanation for this ability in the time-tested concept of inhibition. At the molar level,[34] inhibition is a situation in which one bodily function is temporarily halted by the action of another. Once the restraining power is removed, the inhibited function can continue as before, or as normal (Diamond *et al.*, 1963). As long ago as 1890, William James suggested that inhibition is essential to normal functioning when he wrote:

> We should all be cataleptics and never stop a muscular contraction once begun, were it not that other processes simultaneously going on inhibit the contraction. Inhibition is therefore not an occasional accident; it is an essential and unremitting element of our cerebral life (p. 583).

The more obvious forms of molar inhibition include daydreaming, sleeping, and watching soap operas, but other agents of conscious inhibition, such as drugs and alcohol, are easily available. In this report the emphasis will be on the nonconscious inhibitory mechanisms of the central nervous system (CNS). The CNS is the most complex mechanism in existence. It is a system in which the parts are constantly active and at any point in time many of the parts are actively engaged in rivalry. The rivalry is adaptive if the effective inhibition of incompatible responses results in organized behavior. Diamond *et al.* (1963) discussed a study in which a cat, after spending its entire life in darkness, was unable to blink its eyes in a lighted room. The poor animal died of a "tonic-clonic" seizure, and we can only speculate about what the effect on humans would be in a similar experiment.[35] We do know that Dement's (1974) studies, in which subjects were prevented from dreaming or lapsing into rapid-eye-movement sleep, had to be discontinued because of adverse effects on the subjects. In a much less dramatic but more lifelike context we might ask what would be the effect of living in the downtown areas of some cities if none of the easily available cop-outs described earlier were available? Tuning out is as essential to city dwellers who have to live in ugly neighborhoods and drive on monotonous expressways as it is to secretaries who have to type long, boring papers, and to students who have to attend dull lectures.

The Neurophysiological Basis of Inhibition

In the French *et al.* (1974) schema described in Chapter Three, observable responses followed observable stimuli. The transmission is assumed to occur magically, and little thought is given to what takes place between the stimulus and the response. This gap is filled by what Hebb (1966; 1967) has called the "mediating processes" of any mental activity. Even a cursory discussion of these processes requires some elementary background in neurophysiology and the workings of the CNS. In simple terms, the CNS is a black box connecting receptors with effectors and is the medium by which sensory stimuli can eventually guide behavior (Figure 14). Information is transmitted through the system in nerve impulses carried along three paths: *afferent paths*—connecting receptors to the CNS, and within the CNS, from lower to higher centers; *efferent paths*—connecting higher to lower centers, and from the CNS to effectors; and *internuncial paths*—connecting different points inside the CNS at about the same level. Even the simplest behavior involves the firing of a substantial subset of the 10^{10} neurons in the CNS. Each neuron has a body, a nerve fiber or axon, and a number of projections called dendrites. The axons conduct nerve impulses from one neuron to another across interneuronal gaps or synapses, but neural firing will not occur until a threshold level is reached, whereupon conduction occurs by variations in potential surface. Most neurophysiologists believe that the arrival of each pulse causes a small amount of a transmitter substance to float across the synapse to the adjacent neuron. In other words, the action at the synapse may be chemical rather than electrical, but when the transmission occurs, new (postsynaptic) potentials of two different types are set up:

a) depolarizing, or *excitatory;* setting up an excitatory postsynaptic potential (EPSP); and
b) hyperpolarizing, or *inhibitory;* setting up an inhibitory postsynaptic potential (IPSP).

The inhibitory synapses tend to diminish the overall effect of the impulse, in fact they block transmission by making the neuron on the other side of the synapse temporarily hard to excite (Hebb, 1966). At any one

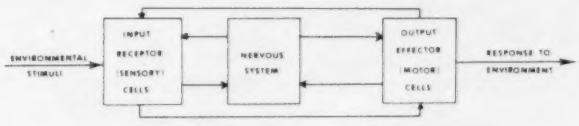

Figure 14. The Nervous System as a Simple Black Box.

[34] Pertaining to the whole body as opposed to individual molecular structures.

[35] We can also only speculate on what a "tonic-clonic" seizure is!

time, inputs approach a neuron from a host of adjacent axons, any or all of which may be transmitting inhibitory or excitatory impulses. Each neuron thus performs a summation function that can be expressed mathematically, and a model of neuron activity is described in Appendix B.

Inhibition: How Does It Help?

The concept of inhibitory control mechanisms is useful for helping us understand how people cope with difficult situations and how they control the excessive stimulation which might otherwise tend to overwhelm them. In this discussion we have considered the inhibition concept at the molar and at the molecular levels of behavior, and the mathematical formulations help us to think more rigorously about the neurological processes involved in inhibition (See Appendix B).

Adaptation behavior implies environmental control by a variety of conscious or nonconscious means, and inhibition of either type makes possible a wider range of choices. Individuals can shut out the ugly or the painful and they can make a complex world more straightforward by attending to only a sample of the environmental stimuli. Every choice made involves some degree of inhibition and any act performed means another is inhibited. In this way, the external possibilities presented by the environment (the environmental demands and supplies to use the terminology of Chapter Three) can be matched to the internal capabilities of the organism. Presumably, if the compromise is successful the individual can adapt with a minimum of mental and physical stress.

Research competencies will effectively prevent geographers from conducting research of the type Ratliff (1968) and Hobson *et al.* (1975) have performed, and the value of this discussion may only be the intellectual exercise of following ideas through to their conclusion. The concept of inhibition, however, has several intuitively satisfying aspects. In the first place, the idea of inhibition fits snugly into our everyday experiences. We all know that pleasing environments make us feel good. We can sit for hours watching a campfire or a waterfall, and the positive effects of such activities are substantial. On the other hand, ugly views from structures built alongside urban expressways, and polluted skies, are visual elements we complain about continually but which we are generally able to ignore.[36] A second intuitively appropriate aspect of inhibitory control mechanisms is the idea of thresholds. In design terms, it requires more than one piece of pleasant architecture, more than just a few trees, and more than a pedestrian mall to make a shopping center a visually and functionally satisfying environment. What is required is a combination of buildings, trees, and pedestrian malls to provide an interesting blend offering diversity to the viewer without being too complex for the walker or the shopper. In other words, a threshold level has to be reached before a positive effect can result. Similarly, with unpleasant environments it may be possible to ignore, simply by closing our eyes, the deserted concrete parking lot across from our apartment building. But when we add to this situation the continual threat of robbery and mugging every time we step outside, and the incessant roar of the traffic in the street below, we may well decide that we have had our fill. As Glass and Singer (1974) have demonstrated, the negative effect of urban noise diminishes in taller buildings. It is not necessarily noise per se that is stress-inducing, but noise over and above a certain threshold level. Similar findings have been reported in the case of high density living and its effects on the perceived stress among inner city residents (Pierce, 1975).

Further intuitive support for the concept of inhibition has been amassed by people searching for neurological explanations of certain types of mental illness. Variations in inhibitory capacity may be manifested as mildly as individual personality differences, but some researchers have suggested that schizophrenia and other forms of mental illness may be a response to or a symptom of inhibitory deficiencies (Diamond *et al.*, 1963). Thinking of the brain and the Central Nervous System as adaptive control mechanisms with inhibitory negative feedback invites analogy with computing machines, an analogy which has precedent in the literature (Wooldridge, 1963; Ashby, 1960; Milner, 1970). Conceivably a computer simulation model of human adaptation could be developed and applied in different spatial and environmental contexts. As Hobson *et al.* (1975) have demonstrated, geographers are not the only academics who have looked to other disciplines for theoretical models to simulate the complex reality of a situation they wish to research. The threshold model, the predator-prey model, and other ecological and biological models (May, 1973; J. M. Smith, 1975) might turn out to be simplified but fairly realistic models for simulating human behavior in a variety of stressful contexts.

An Aside and Bridge: Freud and the Concept of Inhibition

It is interesting to note that Freud, at an early stage of his career, suggested a physiological basis for his ego theories (some of which will be discussed in the final section of this chapter). Freud described two types of neurons:

1) those which let energy pass through them, and
2) those in the cerebral cortex.

The latter have synapses that can resist the passage of nervous energy, and consequently the energy in a neuron at any time may be insufficient to overcome the resistance at the synapses. In such a case the energy simply stays put, and the neuron is occupied or invested with energy, or in Freudian terms it is cathected. Energy captured in the neurons this way is vital for nervous functioning, and in fact Freud defined the ego as the totality of energy investments at any given time. The subsequent transmission of energy, and consequently all behavior, depends on resistances at the synapses (past facilitations) and the sum total of the inert energy in-

[36] A similar hypothesis emerges from the recent major work on childhood coping by Murphy and Moriarty (1976), who believe that children are highly resilient as they grow up and are able to cope with many problems. Much of what we think is bad for children may turn out to be good if adequate problem solving mechanisms are used.

vested in the neurons. According to Freud, energy invested in one neuron will inhibit the passage of nervous impulses to another. In his terminology, where an ego exists it is bound to inhibit psychical processes:

> . . . wherever there is a nervous system which retains the effects of past experiences and utilizes them to eliminate or reduce responses which have elicited pain, inhibition must be present (Diamond *et al.*, 1963: 247).

Role changes and the different stages of human development can also be explained partly in inhibitory terms. For example, the voluntary inhibiting and loosening of the sphincter muscles is a reorganization of the previously established balances and hence a developmental stride forward. Diamond *et al.* (1963: 301) have also referred to the mother's role in complementing the child's inadequate inhibitory facilities:

> . . . the mother . . . is essential as a source of inhibition-stimulation for the infant, and in the absence of such stimulation, physical maturation alone does not suffice to ensure satisfactory development of the neuron organization.

Childlike behavior also provides another example of the importance of inhibitory control for adaptation. One of the easiest ways to control the amount of stimulation from the physical and interpersonal environment is to vary the amount of surrounding space. Children in particular enjoy playing in small spaces, in tents, in corners, and in doll's houses, and their attempts to block out excessive stimulation may help to compensate for inadequate inhibitory capacities.

The Neo-Freudians and the Concept of Ego Boundaries

With the exception of the note at the end of the last section, ego psychology and neural inhibition are as far apart theoretically as chalk and cheese. In this section the work of a group of psychologists known an neo-Freudians will be discussed, because their ideas about the ego and its role in human functioning include some useful theoretical concepts for people interested in spatial behavior and adaptation to environmental stress.

The ego is not an easy concept to describe in a few lines. It consists of the total awareness of one's self and the subjective contents of one's thoughts and feelings. The ego also includes an awareness of values, goals, emotions, and moods. Landis (1970:2) has referred to the ego as:

> The aspect of personality that refers to the immediate experience of one's personal existence; as differentiated from events that refer to the external world, and from unconscious phenomena.

From Landis' statement it is evident that the ego defines the self perceived as self and differentiates it from that which is external to the self, namely the environment. Implicit in this definiton of the ego is the idea of boundaries separating a person from the external environment, or more simply the ego from the nonego. Federn (1952) has referred to the ego boundary as the periphery or the edge of an ego feeling at any point in time. Presumably normal persons perceive themselves as separate individuals who are able to differentiate clearly between their feelings and the environment, but it is possible that different types of ego boundaries could produce various affective states. Landis (1970) suggested, for example, that a partial collapse of ego boundaries could produce hallucinations and persecution complexes, and he described two different ego situations: one with impermeable boundaries which results in isolation behavior and a strong social and spatial desire for privacy; and another with permeable boundaries which would help produce feelings of fragmentation or symbiosis, and an inability to separate oneself from the outside world.[37] Landis (1970:4) quotes one of his patients in the latter category: "Sometimes it's like I'm one with my mother. She dominates my entire personality." Werner (1957:81) similarly suggested that ego boundary impairments result in a decline of polarity between the object and the subject, until ". . . objects are no longer evaluated in their pure objectivity, but [are] absolutely interpreted in terms of the affective drives of the person. . . . The properties of things cease to be entirely objective, geometric and 'out there.' " The person with an impaired ego boundary is unable to stand back and evaluate the world out there. In geographical terms such persons are unable to put any distance between themselves and the environment.

Some researchers have claimed that inadequate development and maintenance of ego boundaries is a central feature of schizophrenia (Freeman *et al.*, 1958), and Cameron (1967) has drawn attention to the poor demarcation between person and environment in schizophrenic language, and the schizophrenics' inability to maintain the boundaries of a problem and to restrict their operations within its limits. The findings of Freeman *et al.* (1958) and Cumming and Cumming (1967) suggested that a scientifically planned environment could help to reorient the person with a poorly demarcated ego boundary, and their work was instrumental in developing the notion of a therapeutic community (see Chapter Two).

The Ego and Adaptation

According to Freud (1920; 1954) the ego performs a "synthetic" function, compromising between conflicting impulses and demands, on the one hand between the structure of the superego and the environment, and on the other the demands of the id. As Cumming and Cumming (1967:13) noted, Freudian ego was ". . . an arbitrator, a transmuter, and a synthesizer, establishing priorities." Hartman (1958), however, pointed to certain "executive" functions of the ego that could develop naturally without Freudian conflict, and such functions would include native competencies such as speaking, walking, and intuition. Erikson's (1950) idea of "ego identity," a feeling of appropriateness or satisfaction, attempts to bring the two concepts of the ego together. For Erikson ego identity results from a harmony be-

[37] This inability might result in feelings of not being in control of one's world (Rotter, 1971) or of "learned helplessness" (Hooker, 1976), both of which are discussed in Chapter Two. The idea of permeable ego boundaries complements Altman's (1975; 1976) model of privacy.

tween human impulses (the "synthetic" and "executive" portions of the ego) and the external environment. Adaptation in this sense refers to the way people come to perform appropriately in a wide variety of situations. This is a two-way process: firstly, the person reorganizes him/herself to adapt to the milieu, and secondly, the milieu adapts to him/her. In therapy situations, either approach can be used to help the individual make the necessary adjustments. Maladaptation would imply a disjunction between the person and the milieu, a state which might be called ego diffusion, or in common parlance we might think of a person who does not "have his head together."

The ego concept of personality development is similar in a number of ways to the concepts of the Gestalt psychologists. Lewin (1951), for example, thought of the individual as a separate and segregated entity within a "lifespace" which is subdivided into a perceptual-motor region, in direct contact with the environment; and an inner personal region, which contains a honeycomb of cells or "systems in tension." Personality in Lewin's schema involves an organization of interacting systems that are related and separated in varying degrees. In other words, the lifespace contains differentiated areas that become more coherent and numerous as the individual develops. With increasing years new areas are added, and integration occurs among them. Growth may occur by differentiation, for example, when new knowledge replaces old knowledge, or by integration, when new ideas or new role relationships are integrated with existing ones.

When an environmental structure impinges on a person it arouses an ego feeling, or a sense of self which induces a cathexis or a flow of energy to greet the stimulus and determine its relationship to the self. In this context, as Federn (1952) observed, the ego boundary is the sense organ where stimuli are received, interpreted, and internalized. Eventually all concepts, norms, and events occurring at the ego boundary will be "egotized," and as Bergmann (1963:99) noted in his review of Federn's work:

> Most ego experiences pour out from, and turn back to, the outside world from which all perceptions are originally stimulated. In this mutual flow, trespassing on the ego boundaries is clearly felt. The basis of sanity is a correct and automatic recognition of this breach between subjective mental experience in the world and a knowledge of the status of the world as it actually exists.

The ego feeling at the boundary separates the self from the environment and tells the person when the outside world is trespassing on his/her space. For Federn the boundary was the mechanism by which the affective parts of the world are sensed, sorted, classified, and ultimately known. Unless the ego boundaries are clearly felt, action cannot proceed effectively and the individual will be confused and disoriented.

Using a theory of this type we may proceed to ask what actually happens when a person comes into contact with change or stress in the environment? Cumming and Cumming (1967) suggested the answer in their discussion of ego "sets," which are internal representations of some environmental events (as "organizations" these "sets" are presumably similar to Lewin's "lifespace" areas). As the person develops, the sets are strengthened and differentiated through interaction, and they also continually become more numerous and complex as a result of integration. In a situation of change there would be an "ego sensation" resulting in the loss of some objects and the addition of new ones. On the one hand we can assume the ego needs some constancy of situation to provide repeated confirmation that it can handle the event (predictability), but on the other hand too much variety would make any situation of stress a major crisis (chaos). Ego sets will come into action at different times and with different strengths, and they may also be hierarchically organized as a result of cultural preferences or socialization processes. Cumming and Cumming (1967:42) described "a complex and flexible ability to arrange or re-arrange sets as the situation shifts." Thus in any situation of stress or change we might think of:

a) *ego ability*—the capacity to find the sets or organizations to cope with any environmental problem, and to hierarchize them appropriately. The ability to persevere may reflect such an activity, as might the ability to put a task aside when social situations demand one's attention elsewhere.
b) *ego strength*—the general capacity of the ego, the number and variety of sets, and the complexity of their organization. Ego strength might be thought of as a person's overall resistance to mental illness.

Returning to the well-focused and diffused ego boundaries mentioned earlier, we can now hypothesize about the possible interactions between different ego conditions in a variety of environmental settings, and suggest some of the possible affective states resulting from the interaction (Table 18).[38] In institutional or natural settings, environmental manipulations could be used to bring about changes in the individual's affective state. It might be over-optimistic to suggest that the person with a diffuse ego in an ambiguous environment could easily learn to experience positive affect by altering or manipulating the environment, but it might be possible to shift the affect somewhat, making the individual more responsive to other types of therapy.

Changes in the environment are crises to which people must first adjust and subsequently adapt. For example, when old people retire they take on less than they give up, and the ego has to be reorganized around fewer roles and objects. A new hierarchy of ego sets is needed, with sets related to action making way for sets related to meaning, interpretation, ideas, and introspection.[39] Mi-

[38] The concepts of well-focused and diffused ego states are related to Kaplan's (1973) discussion of pleasurable and painful states of mind. A person with a well-focused ego would be able to plan ahead effectively and would feel pleasure from organizing thoughts and actions. On the other hand, the diffused ego state would be similar to the feeling we have all experienced at some times, of not knowing what to do next or where to go.

[39] We are coming close here to another area which seems appropriate as a topic in geography and mental health, namely the role of the family and "tribal" networks in providing life-sustaining support. The migrant family is separated from its social network, from those who in the past have provided help and friendship from day to day. The

TABLE 18. AFFECTIVE STATES RESULTING FROM EGO-ENVIRONMENT INTERACTIONS

Condition of the Ego	Condition of the Environment			
	Clearly Organized		Ambiguously Organized	
Well-Focused	*Complex*	*Simple*	*Complex*	*Simple*
A. Many well differentiated ego sets	Sense of appropriateness	Boredom	Intense curiosity	Mild curiosity
B. Few, but well differentiated ego sets	Sense of curiosity	Sense of appropriateness	Anxiety	Anxiety (curiosity)
Diffuse				
A. Many poorly differentiated ego sets	Sense of support	Frustration	Panic	Irritability
B. Few poorly differentiated ego sets	Anxiety (curiosity)	Sense of support	Withdrawal	Apathy

Source: Adapted from Cumming and Cumming (1976:41).

gration would also produce a temporary disruption of ego organization in which the self receives little or no reinforcement from the people and objects around it. Perhaps for the first time persons need to evaluate self-consciously their ideas and beliefs. New residents in a city neighborhood need to be outgoing if they are to overcome nostalgia for the old ties. They must ". . . allow sufficient cathexis to flow to the new situation in order to perceive and interpret it correctly" (Cumming and Cumming, 1967: 49). Geographers may reach a new understanding by looking at a number of problem situations in this light, for example, rural dwellers relocated in large cities, old people forcibly relocated in apartment dwellings, and even mental patients discharged from the hospital. An investigation of complex or boring environments could be approached in a similar way. Office workers with dull jobs may require a reorganization of ego sets to stimulate themselves, and inner city dwellers may need to undergo similar changes.

The major problem for geographers who wish to apply such concepts in research studies is one of measurement. How, for example, could one determine which people have coherent ego organizations as opposed to diffused ones? Landis (1970) has discussed one measurement solution, using Rorschach tests to establish a permeability continuum for ego boundaries. In one study subjects were divided into those with permeable and impermeable ego boundaries and Landis claimed his results were validated by a questionnaire designed to gauge a person's experience of openness and closedness under different interpersonal and environmental situations. Gutmann (1970) similarly classified ego states into "autocentric" (diffuse) and "allocentric" (well-focused), with the difference based on the level of ego diffusion and the condition of the ego boundaries. Gutmann used Thematic Apperception Tests to distinguish between people in the two ego categories.

One further application of the ego boundary concept involves the connection between ego boundaries and the way people use space. Evidence from schizophrenics and other mental patients indicates that spatial experiences are sharply limited and ego boundaries are poorly defined (Palombo and Bruch, 1964). Some similarity exists in this respect between the notion of body images and the ego boundary. Reitman and Cleveland (1964:168) for example, discussed the body image as ". . . the tendency of an individual to perceive his body image as definite and well delineated versus vague and imprecise." Body image and ego are not identical concepts because the ego boundary may include representations of other people (empathy), or it could exclude the body entirely, as in the case of people who forget they are hungry when their minds are otherwise occupied. The two concepts are related, however, as Horowitz

TABLE 19. SPATIAL ALLOCATION AND "THE SOCIAL SCENES" TEST

Social Scene	Mean Distance Between the Figures (cms.)	
	I Dominant	P Dominant
1. "You and the head of the company"	6.9	5.1
2. "Child and Parent"	7.6	5.0
3. "You and someone you are fond of"	4.0	2.0
4. "Two children on a treasure hunt"	6.9	6.1
5. "Two people angry"	6.4	5.2
6. "Two people who know the city will be bombed"	6.8	6.2

I = Impermeability
P = Permeability
Neither significance levels nor sample size were reported.
Source: Landis (1970: 78).

separation puts more pressure on the members of the family to interact and help each other. This is essentially the thesis of Bott (1971), who discussed the relationships between conjugal roles and the strength of the supportive (external) network. In his preface to Bott's book, Gluckman (p. xix) suggested that the most important factors in determining the strength of the network were distance variables and network characteristics which can be measured in both social and spatial terms.

(1966:458) argued in his discussion of body image as "... part of that ego function called self representation." The "body-buffer zone" described by Horowitz *et al.* (1964:655) is also related to the concept of ego boundaries, because it appears to change its size and shape as a result of "... immediate interpersonal events as well as the current ego states and motivational states of the individual." Kinzel (1970) found that the body-buffer zone varies greatly in size and shape between violent and nonviolent prisoners, and Seguin's (1967) concept of "individual space" was found to vary in size depending on the environmental setting, the individual's emotional responsiveness, and the level of psychopathology.

Landis (1970) reported some results from a "social scenes" test in which he asked subjects with highly permeable and impermeable ego boundaries to construct interpersonal scenes with figures. For a variety of situations, the mean distance between the figures was lower for subjects with permeable boundaries (see Table 19). In a similar study, Gutmann (1970) attributed different spatial behaviors to the "autocentric" and "allocentric" ego states of his subjects. In an autocentric state the subject seeks out and creates relatively closed and private domains that are bounded at their perimeters but diffuse and amorphous within. In other words, autocentric space is a setting for human interactions that are emotionally pertinent to the self, an idea which is similar to Calhoun's (1970) discussion of the needs that are related to an individual's "wholeness" (Chapter Three). The allocentric ego state implies that the subject searches for and creates open areas which will allow movement, exploration, and surprise. Although a two-dimensional view of spatial experiences may be an oversimplification, it is an interesting concept which can help us understand some of the differences in spatial preferences and behavior, and one which complements the traditional theories of privacy, personal space, and crowding (Altman, 1976). It is possible that choices made between one environmental setting and another, in spatial terms at least, are related to different states of ego organization and the permeability of the ego boundaries. For example, impermeable ego boundaries, to use Landis' term, may imply a sense of spatial vulnerability and the need for protection. There is potential here for empirical research, and geographers might consider some of these ideas as a theoretical contribution to studies of spatial behavior.

V. CONCLUDING REMARKS

"Geography and mental health" is not one thing but many, although at the risk of oversimplifying, two general themes can be identified. In the first place, geography and mental health is concerned with the influence of geographical factors on measures of mental health, or more generally with the influence of location on well-being. A second theme is more specifically related to problems of service delivery and the effects of such factors as relative location, distance, and accessibility on the demand for and supply of help in the community. In both these general areas many problems can be studied, many questions need to be asked, and equally many geographical techniques can be applied.

As a personal preference I suggest that further work in geography and mental health should attempt to combine aspects of both themes in a further exploration of the therapeutic community within the community (see Chapter Two). By tracing the evolution of mental health service delivery in this country (as well as services for the mentally retarded and criminal populations), we can observe the emergence of distinctive geographical trends. The changes have been slow, but the locus of care has shifted from a system of monolithic, non-natural, and isolated institutions, to a more diffused and natural provision of helping centers located within the community. The shift has been away from a centralized and toward a regionalized system; from a situation of one to a situation of many; and from a system involving just a few skilled professionals to one utilizing numerous unskilled volunteers and nonprofessionals in the community.

Mental hospitals and other forms of institutional care have evolved as a societal replacement for help that may at one time have been provided informally and naturally within a local social network. The movement towards community mental health can be viewed, therefore, as a vital step in an attempt, conscious or otherwise, to put the locus of help back among the intricate social networks of friends, neighbors, and relatives. Perhaps these voluntary networks are ideals, but perhaps they once existed and have since been somewhat eroded by modern urban living. Whatever the explanation, mental hospitals and community mental health centers have served to provide the help that was not being provided informally. Increasingly today we can observe small-scale attempts to revert to natural help at a scale even broader than the community mental health center, and in a number of areas, particularly urban areas, people have made serious attempts to recreate networks of informal community help. In "network therapy," for example (Speck and Attneave, 1973) attempts have been made to help the patients through a process of "retribalization," in which all available family members, relatives, and friends are included as potential therapists. In a recent study of community child care provision, Collins and Pancoast (1976) discovered intricate networks connecting the major caregivers with potential clients located throughout the community. The caregivers do not advertise their services, but information is circulated quietly and efficiently to new community families who are in need of help.

Geographers interested in the study and care of mental health and mental illness could investigate community helping networks in an attempt to answer a number of questions; for example: a) where do people currently go for the informal treatment that might help them avoid formal treatment at a later date? and, b) does the pattern of help provided correspond to the pattern of needs? What is being suggested is a study of the spatial ecology of community helping networks, a study designed to find out what networks of informal help already exist and what still needs to be provided. Sopher (1972: 5) hinted at a study of this type when he suggested that:

> . . . there are important questions for social geography that deal with man's fate in the contemporary world—questions of identity, of belonging, of knowing where one is in space-time, and the problems of overcoming the primordial fear of the stranger and of extending the radius of trust.

If help is to be provided informally in the community, we need to know more about how individuals extend "the radius of trust," how they break down the barriers of loneliness and stigma, and how they tap into a "natural network" of help (Collins and Pancoast, 1976). Geographers should be able to contribute in this area by unraveling the spatial structure of informal networks of community help. Who are the major helpers and sources of information and referral? How does information flow through the networks? Are the networks different in areas of high residential mobility? Some sociologists have begun to study questions such as these (see for example Craven and Wellman, 1973; Fischer, 1976), but to date little or no work has been done by geographers. We need to know first of all what provisions for help already exist in the community, and in this respect there is cause for optimism because many of the people who experience problems in living are somehow able to cope without visiting a social service agency for help. Helping networks are the informal counterpart to organized social services, and in many areas they may actually be carrying the majority of the service load. If on any one day all the people who needed help decided to visit their local agency, the entire system would cease to function. Natural networks cannot entirely replace the organized

agencies, but by responding directly to consumer needs and preferences, they can provide community mental health workers with useful information about how to extend the network of formal service programs. Geography and mental health should not concentrate solely on the study of people already ill, or on the institutions and agencies provided to cater to the ill. Beyond these people and those places are the majority of community residents who are helping each other and being helped in numerous informal settings. In the spirit of preventive community mental health, geographers could make a substantial contribution by studying the spatial patterns in the demand for and supply of help within these informal settings.

APPENDIX A: A METHODOLOGICAL NOTE ON THE USE OF RECIDIVISM AS A DEPENDENT VARIABLE

The follow-up questionnaire was completed by the patient's primary community worker three months after the discharge date. As illustrated in Table 9 and Figure 8, a large percentage of recidivates had already returned to the hospital before the three months had elapsed. In these cases the workers were asked to evaluate the patients' performances while they were in the community, and to try not to let the knowledge of their return influence the evaluations. Whether this could be done was highly questionable.

To test for a bias it was necessary to find out whether prior knowledge of return caused the workers to evaluate the patients' community adjustments negatively. More importantly, it was essential to find out whether the evaluations of patients who returned before the questionnaire was completed were significantly worse than those of the patients who returned after the questionnaire. Table 20 compares the mean scores for patients in both these groups on two composite measures, community adjustment and the stress index. As the scores indicate, the evaluations of patients who returned before the questionnaire were worse than for subsequent returners, as would be expected, but the difference was not significant on either measure. Although a bias may have been present its effect was minimal.

From the recidivism data presented in Table 9, two other important points emerge:

1) About thirty percent of all returners came back to the hospital within thirty days, with another twenty percent returning in the next two months. These data suggest that the problems encountered immediately after discharge are the most crucial to the individual patients. Each extra day spent outside the hospital increases the patients' chances of staying out successfully.

2) Recidivism in this sample is high but is consistent with that reported in earlier studies (see Miller, 1967). Half of the discharged patients returned to the hospital at least once within the first year, which is an unhealthily large percentage for a program whose goal is to shift the balance of mental health care from the hospital to the community. At a more personal level there should also be some concern about the amount of time and effort expended by the patients, their families, and the mental health workers. Although some recidivism is to be expected, and in fact in many cases the workers feel that even a negative experience can be useful to a patient, the emotional turmoil involved must create many casualties. Some of these might be avoided if better predictive data were available.

TABLE 20. MEAN ADJUSTMENT SCORES FOR PATIENTS WHO RETURNED BEFORE AND AFTER THE FOLLOW-UP QUESTIONNAIRE

	Number[1]	Community[2] Adjustment Score	Stress Index[3]
Patients who returned before the questionnaire	29	4.27	6.68
Patients who returned after the questionnaire	26	4.20	6.35
Nonreturners	75	3.26	3.40

[1] This analysis was completed after nine months, by which time only fifty-five patients had returned to the hospital.
[2] A 1–5 scale with low scores indicating better adjustment.
[3] A 1–9 scale with low scores indicating low stress.
Source: Smith (1975a).

APPENDIX B: A MODEL OF NEURON ACTIVITY AND SOME VARIATIONS

A model of neuron activity can be described if a number of assumptions are made:

1) impulses reaching the dendrites of the neuron may help (excite) or hinder (inhibit) the firing;
2) the neuron will fire *if and only if* the total weight of incoming impulses exceeds a threshold level;
3) only one neuron can fire at time $t = 1$, then $t = 2$, etc.

The neuron (X) has 'n' inputs, $X_1 \ldots X_n$ ($n > 1$); one output (m); a threshold level (L); and weights ($W_1 \ldots W_n$) where W_1 is associated with X_1 and so on. Firing (F) at time $t = 2$ is determined by the firing of inputs at time $t = 1$, and:

$m(t) = 0$, means "*m does not* fire at time t", and

$m(t) = 1$, means "*m does* fire at time t" (McCulloch and Pitts, 1943), where 'm' could either be the output of the axon or the synaptic input of the neuron. All of the above can be expressed as follows:

$$F(t = 2) = 1 \text{ iff } W_{1,n}X_{1,n}(t = 1) > L$$

An empirical adaptation of this model has been attempted by Ratliff (1968), who investigated the fields of inhibitory influence surrounding the points of excitation in the retina of the horseshoe crab (*Limulus*). Ratliff hypothesized that the response at any point is determined by the integration of opposed excitatory and inhibitory influences, and by guiding light into the receptor units he was able to depolarize them, causing a nerve impulse to be discharged along the axon. Illumination of neighboring units produced no impulse in the first unit, but caused a hyperpolarization or inhibition in the cell proportional to the number of neighboring units activated and the frequency of their impulse activity. Because each receptor unit is a neighbor of its neighbor, the inhibition is mutual. According to Ratliff, excitation (e_p) is measured by response (r) of the unit (p), so $r_p = e_p$ when the receptor unit is illuminated by itself. In other words the frequency of discharge of impulses from each and every receptor unit in the network is determined by the sum of the opposed excitatory and inhibitory influences impinging upon it. When only two units are illuminated, the situation can be expressed as follows:

$$r_1 = e_1 - k_{1,2}(L_2 - L_{1,2}{}^0)$$

$$r_2 = e_2 - k_{2,1}(L_1 - L_{2,1}{}^0)$$

where L^0 = the threshold frequency that must be exceeded before a unit can exert any inhibition; k = the inhibitory coefficient; $L_{1,2}{}^0$ = the direction of the inhibition; $k_{1,2}$ = the coefficient of the inhibition of unit 2 on unit 1. With a set of 'n' mutually interacting receptor units, the inhibitory influences were shown to combine additively, and activity of the 'n' receptors was expressed in a set of simultaneous linear equations of the form:

$$r_p = e_p - k_{p,j}(L_j - L_{p,j}{}^0)$$

where $L_p{}^0 = 1, 2, \ldots n$; and $j \neq p$. Ratliff proceeded to describe a dynamic model of inhibition, using a series of assumptions, each of which was based on a physiological observation.

In research with other animals the inhibition concept has been used to help explain different types of behavior. Sleep was mentioned earlier as a form of inhibition, and research with cats has demonstrated that reciprocal interaction between sets of excitatory and inhibitory neurons influences the alternation of sleep cycles (Hobson *et al.*, 1975; McCarley and Hobson, 1975). The interaction in this context occurs between two sets of cells in the cat's brain, the Nucleus Locus Coeruleus (LC cells) and the Gigantocellular Tegmental Field (FTG cells), with the connections and hypothesized signs of influence as shown (Figure 15). Hobson *et al.* selected a nonlinear mathematical model of the reciprocal interaction process because of the "nonsinusoidal" nature of the sleep waves (the activity in the FTG cells). They also assumed the effect of an excitatory or inhibitory input to the two sets of brain cells would be proportional to the current level of discharge activity. To express the interaction between the cells, Hobson *et al.* used a model which is a variant of that used by Ratliff, the well-known Lotka-Volterra equations (see May, 1973; and J. M. Smith, 1976). The Lotka-Volterra equations are traditionally used to describe an interaction between (one) predator and (one) prey as follows:

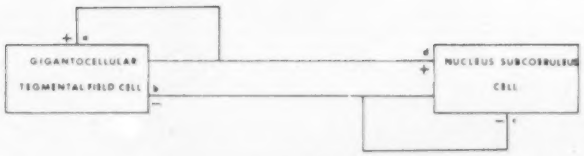

Figure 15. A structural model of the interaction between the Gigantocellular Tegmental Field (FTG) cell populations and those of the Nucleus Locus Coeruleus (LC). Positive signs indicate excitatory influences and negative signs inhibitory. The parameters a, b, c, and d correspond to the constants associated with the strengths of the connections between the cells. See McCarley and Hobson (1975).

$$[dH\ (t)/dt] = H(t)a - \alpha P(t)$$

$$[dP\ (t)/dt] = P(t)\ -b + \beta H(t)$$

where $H(t)$ and $P(t)$ are the prey and predator respectively (if not respectfully) at time (t); a and b are parameters related to the birth rate of the prey and the death rate of the predator; and α and β are related to the interaction between the species. Hobson *et al.* used this system of equations to define the following reciprocal interactions between the cat's two brain cells:

$$dx/dt = ax - bxy$$

$$dy/dt = -cy + dxy$$

where $x(t)$ = the level of discharge in FTG cells (excitatory, analogous to the prey population); $y(t)$ = the level of discharge in LC cells (the predator); and a, b, c, and d are constants defined by the strength and signs of the connections (Figure 15).

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